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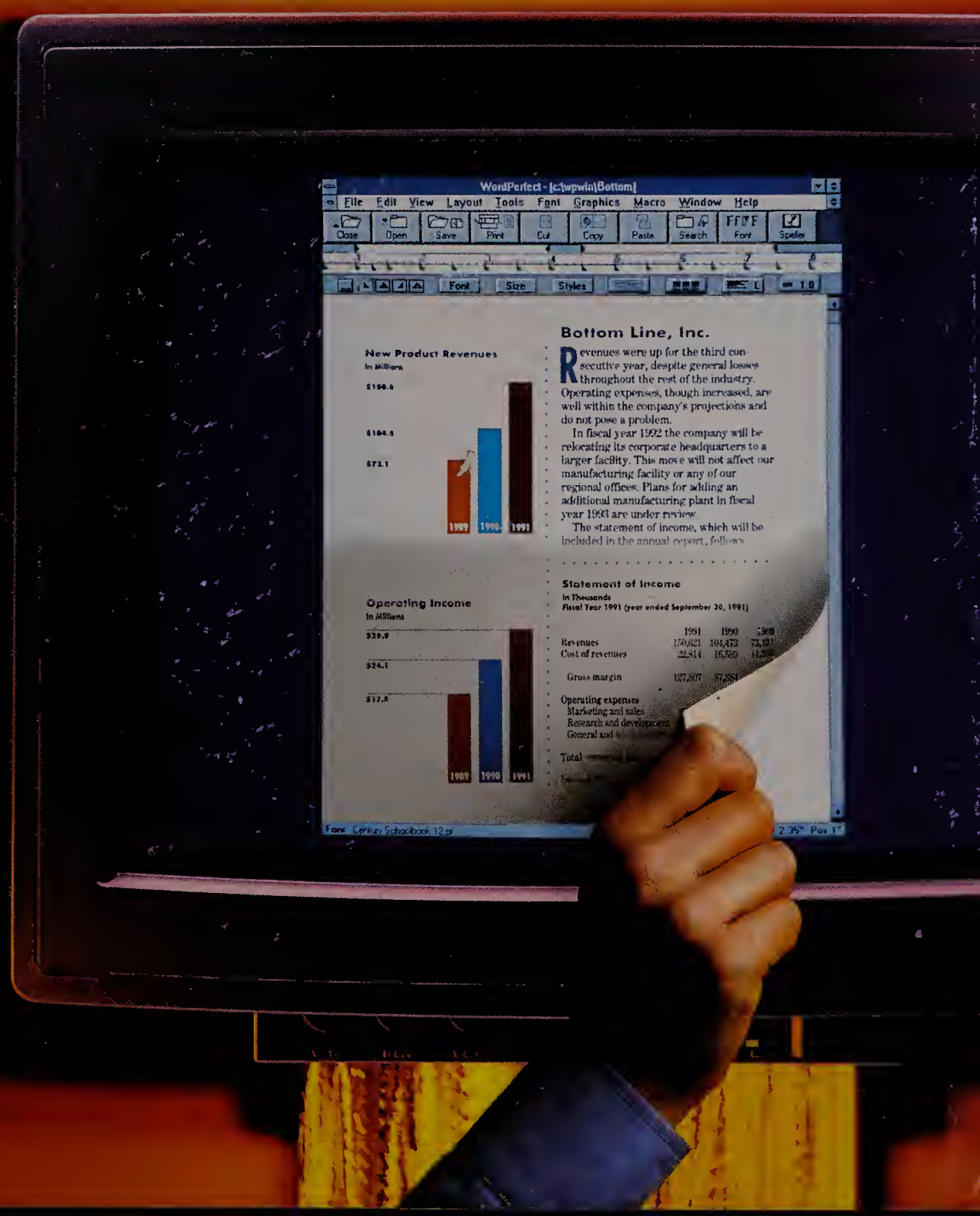

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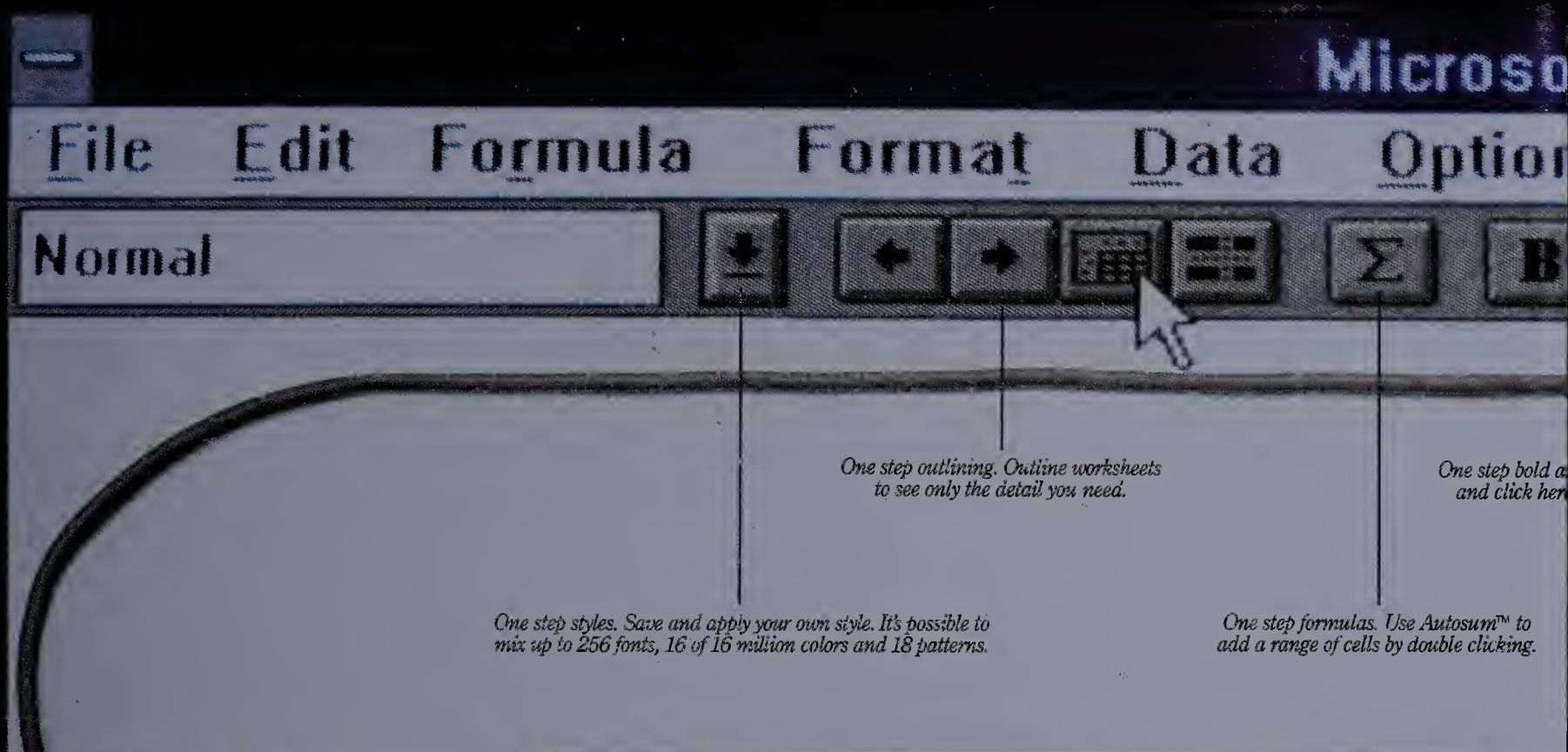

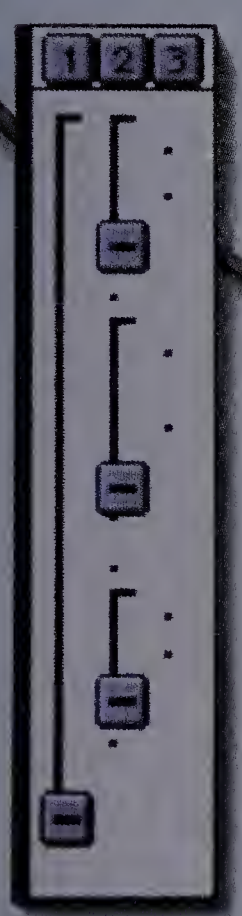

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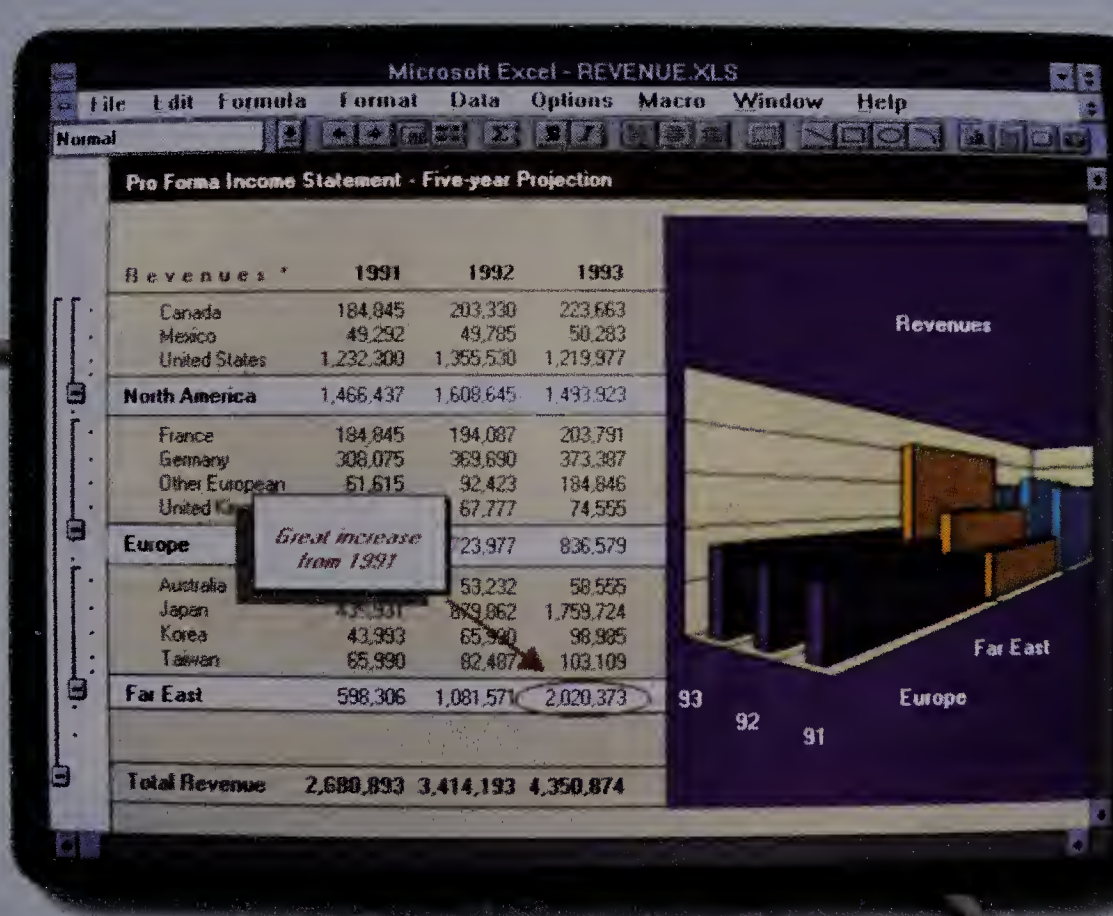

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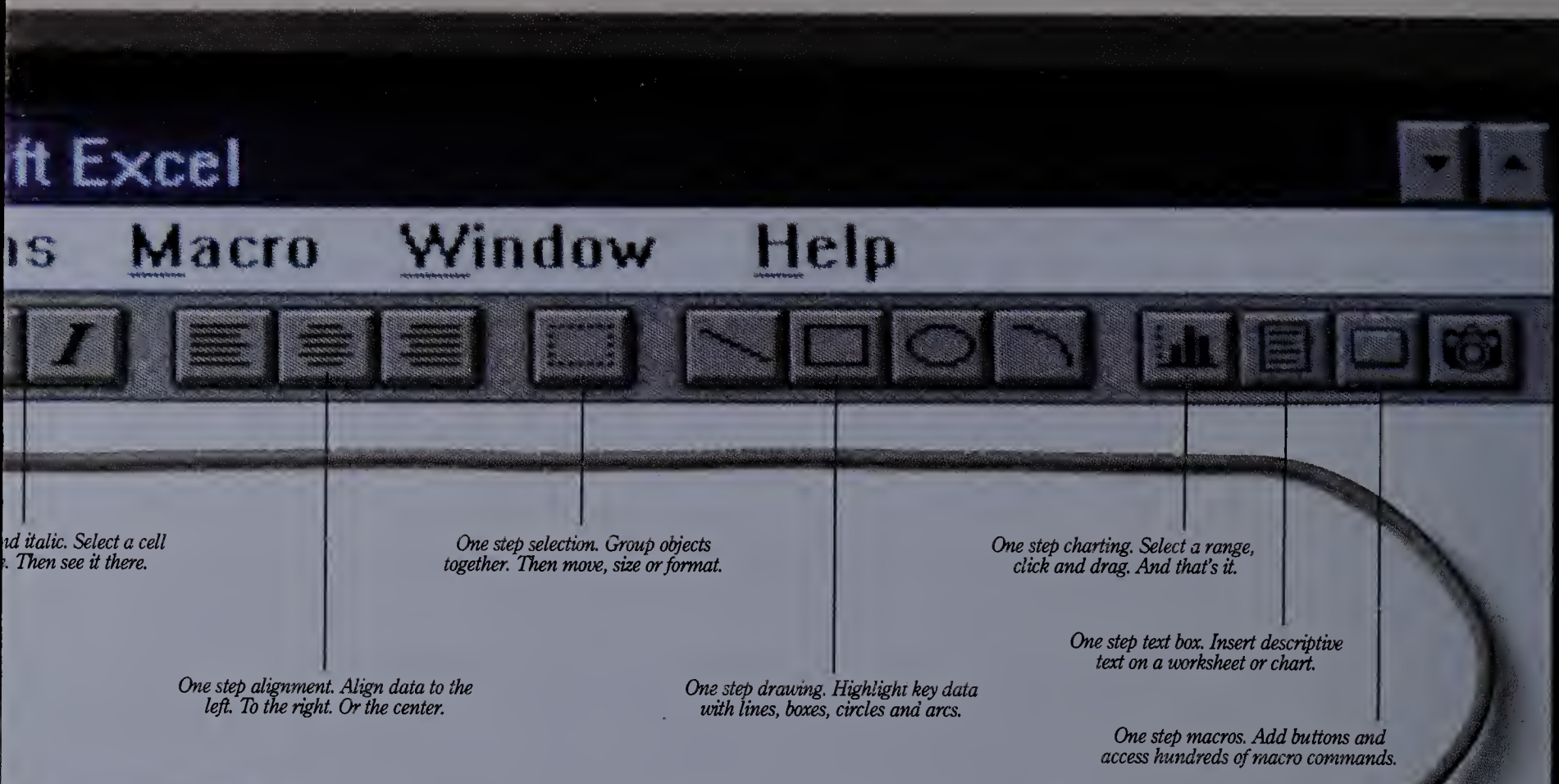

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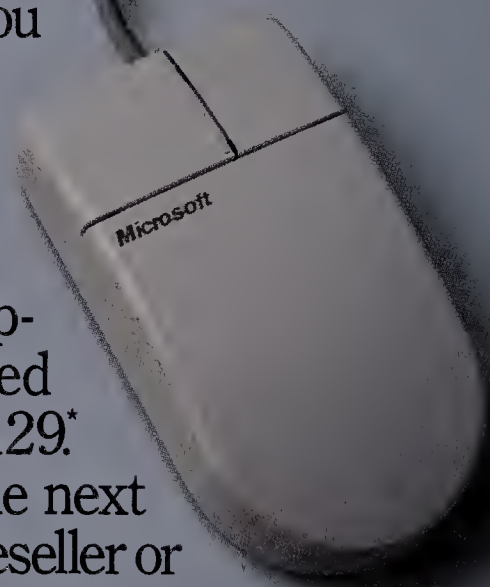

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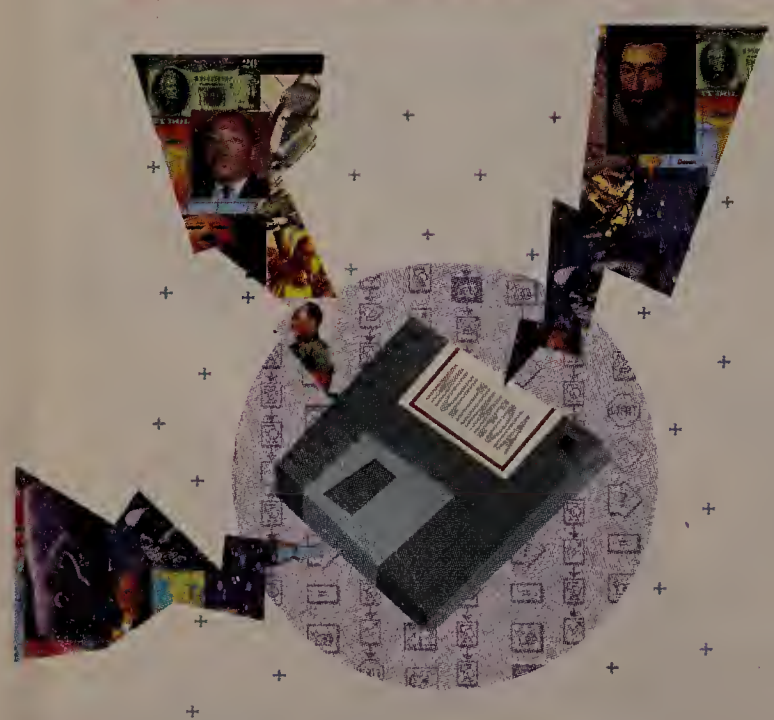

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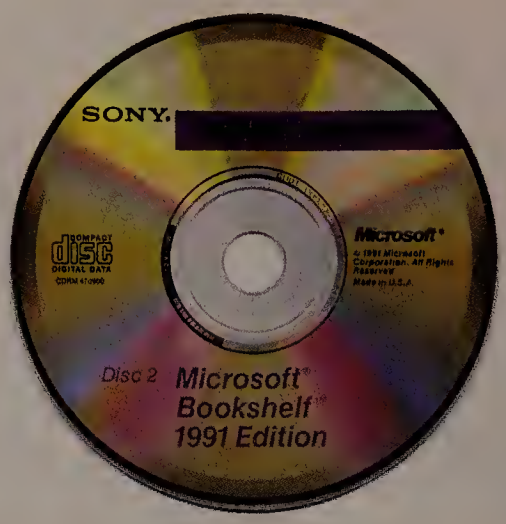

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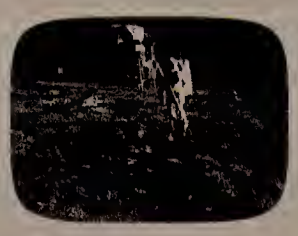

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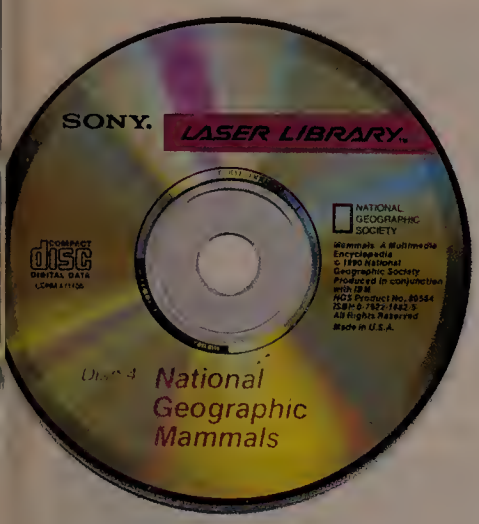

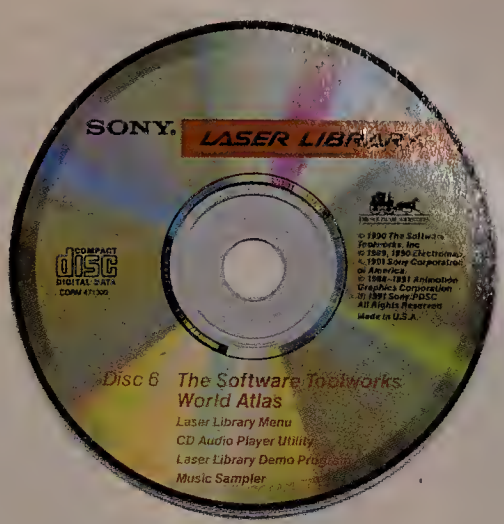

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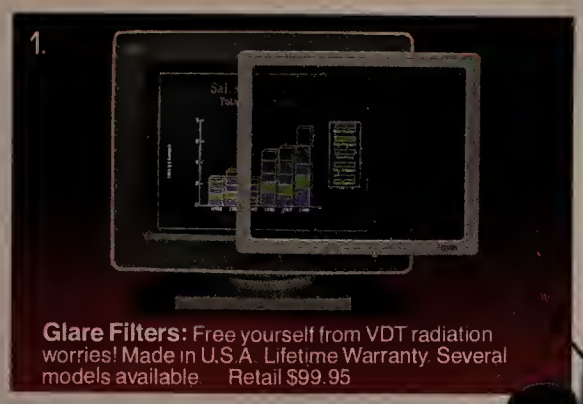

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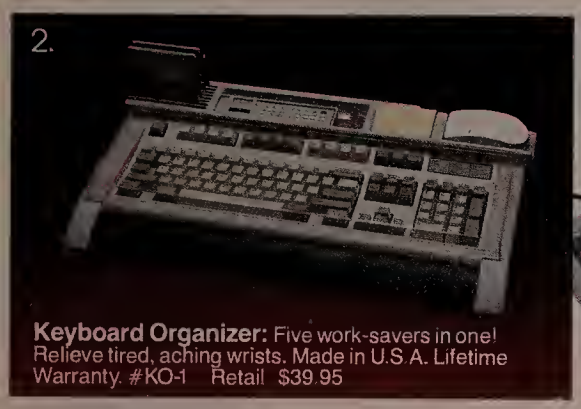

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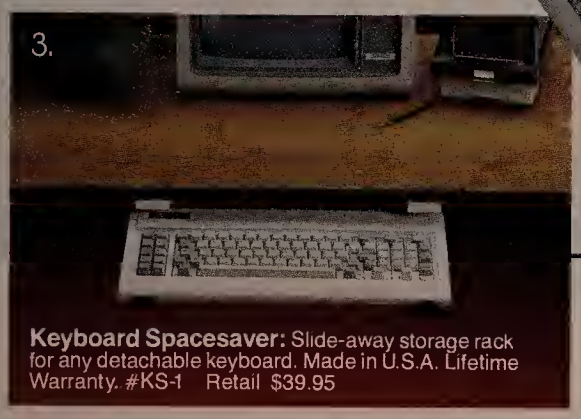

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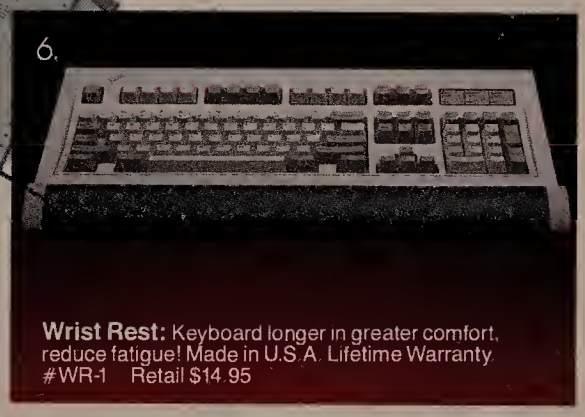

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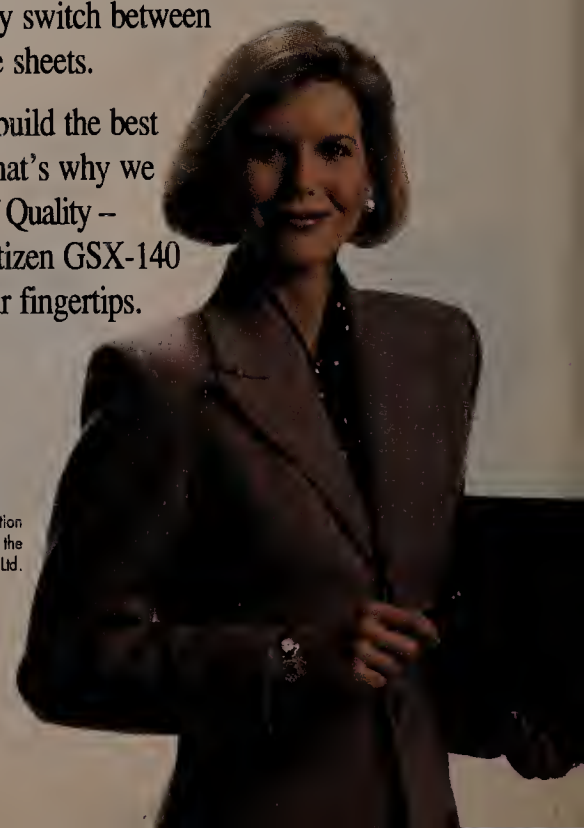


CITIZEN™

Circle 91 on reader service card

New Editor in Chief Phil Lemmons takes the handoff from Richard Landry.

ROBERT CARDIN

Passing the Baton

From his halcyon days on the high school track team to more recent 50-yard dashes down the halls of *PC World*, Richard Landry has always had a faster clock speed than most of us. If you feel a slight breeze, it's because Landry's on the move again, leaving *PC World* to start a sister IDG publication—and passing the baton to our new editor in chief, Phil Lemmons.

Five years ago when I met Landry, then managing editor, I knew right away he was a man with a mission. How could he be in so many places at once? One day he was streamlining work flow, the next he was plotting to make *PC World* the most timely publication in the field. In his spare time, he was punching up articles, adding exciting new graphics, and pushing for more and better product testing.

To no one's surprise Landry quickly moved up to become editor in chief. Under his guidance, *PC World*'s reviews became tough and consumer oriented. He launched a full-service *How To* section and initiated comprehensive coverage for product and industry news. In short, Landry remade *PC World* into an indispensable resource for every business person who buys and uses PCs.

The unstoppable Landry's new magazine, *MPC*, will zero in on one of the hottest areas of computing: multimedia. In Landry's place, Phil Lemmons—former editor in chief of both *Byte* and *MIPS* magazines—will take over the reins of *PC World*.

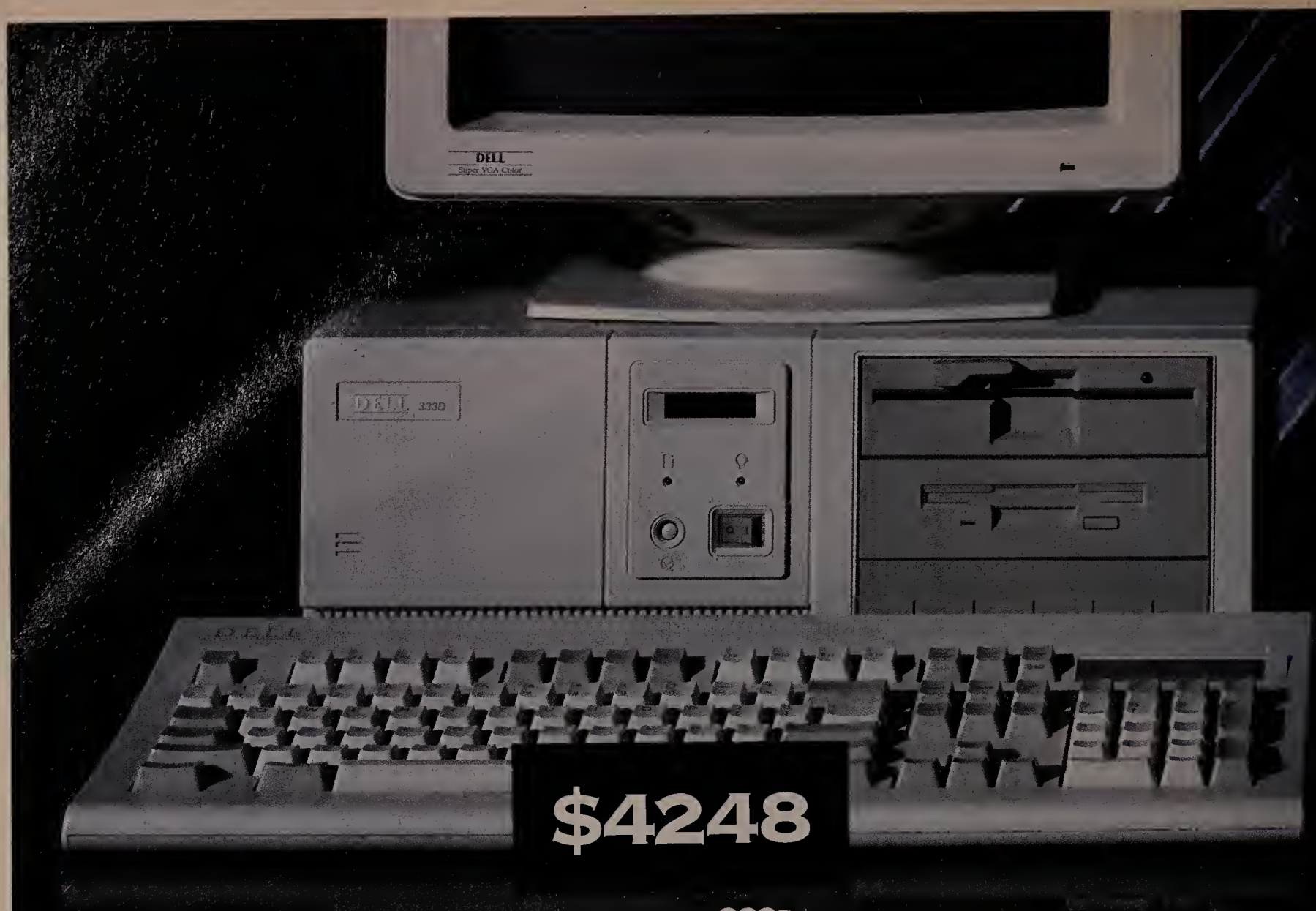
With 15 years' experience in high-tech publishing, the shrewd but soft-spoken Lemmons has a natural affinity for *PC World* subscribers. "As a manager and as a PC user, I'm a typical *PC World* reader," says Lemmons. "My background helps me look at my job from the reader's point of view."

A robust understanding of reader needs has aided Lemmons throughout his career. In his five years at *Byte*, he made vast improvements in editorial quality and operations. He also developed and managed the Byte Information Exchange, affectionately known as BIX, one of the most successful on-line services in the country. These and other accomplishments earned him the McGraw-Hill President's Award for managerial excellence, the parent company's highest distinction.

Lemmons is keenly aware of what makes *PC World* tick—delivering the right information candidly, without technobabble. Of course Lemmons has some dynamic new ideas of his own. "Expect new types of features for the busy management reader," says Lemmons. "Our challenge is to address the immediate problems faced by management users, and provide specific product solutions for those who want to make the most of their PC investment." Phil will be aided in his mission to support the management reader by *PC World*'s new art director, Mitch Shostak—formerly of *Business Week* and the *New York Times Business Supplement*. So in addition to a vigorous new editorial vision, you can expect to see an exciting new graphics approach.

With these two key additions—along with the many veterans who've brought you the magazine for years—the *PC World* team is ready to take on the challenges that face you every day. We recognize that American business is a race—fast paced and uncompromising. Under Phil Lemmons' able direction, you will get the edge you need.

Eric Knorr
Editor



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Microprocessor: 386/SX running at 20MHz
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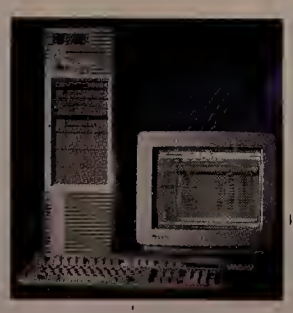

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Special Features: Pre-loaded with Microsoft Windows 3.0, MS-DOS and a Microsoft Mouse
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Memory: 2Mb RAM
Video: TTL Monochrome

AUSTIN 386/SX20 NOTEBOOK
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Microprocessor: 386/SX running at 20MHz
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Video: 10" 640 x 480 VGA LCD Display with 32-Gray Scale
Keyboard: Full size embedded numeric pad with 12 function keys.

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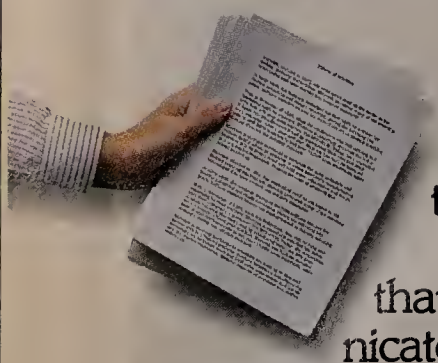
Circle 14 on reader service card

Microtek Presents The Self-Feeding Scanner With A Real Appetite For Words.



It has often been said that a picture is worth a thousand words.

Yet in business, it's words that we use to communicate with most often.

Which is why Microtek has developed the MS-II scanner.

DESIGNED FOR OCR & GRAPHICS

The first desktop scanner designed specifically for Optical Character Recognition (OCR).

It scans words into your computer with the same exact precision that ordinary scanners let your computer receive pictures.

The MS-II comes bundled with OmniType, a special version of Caere's award-winning OmniPage page recognition software, providing a complete OCR scanning solution.

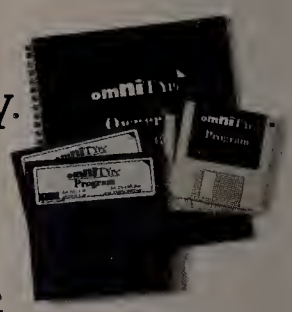
OmniType separates text from graphics while reading nearly any non-stylized font from 6 to 72 points in size.

So instead of having to tediously retype reports, financial statements and other already printed

information, you can quickly scan them into your word processing, database or spreadsheet program. Up to fifty pages at a time.

Of course, the MS-II also recognizes photos and other graphics and scans them just as accurately. Simulating 64 shades of gray.

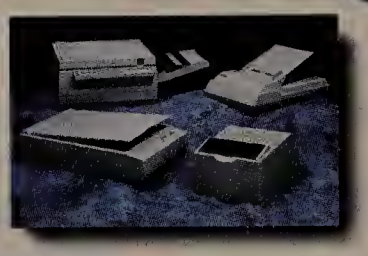
Best of all, the MS-II is designed for limited budgets. It's just $995 if you're using an IBM PC, PS/2 or compatible. And only $1,195 if you have a Macintosh.



PC or Mac, the MS-II scanner comes complete with Caere's OmniType OCR software.

If you're working with words, you owe it to yourself to get a Microtek MS-II scanner. Call 1-800-654-4160 or in California, 213-321-2121 for the Microtek dealer nearest you.

Do it today. Because we're sure you'll agree that the MS-II's appetite for words far exceeds your appetite for typing.



The MS-II is just one member of a whole family of innovative peripherals available from Microtek.

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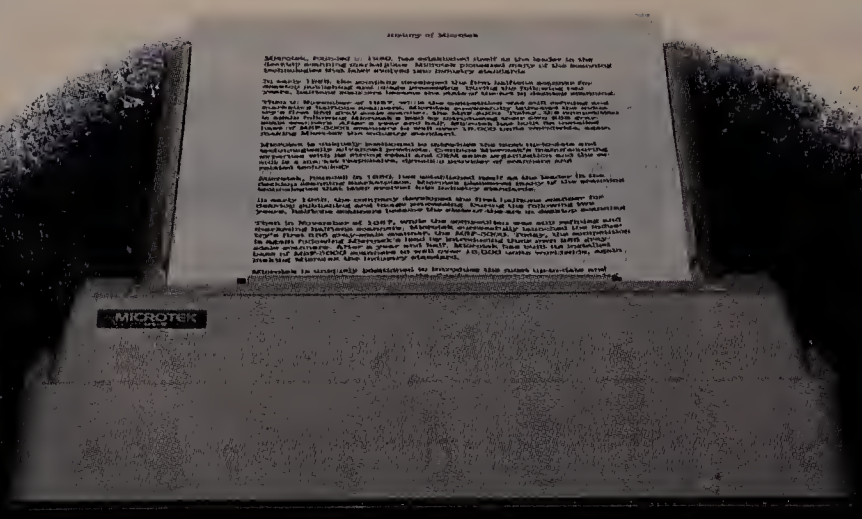

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Circle 162 on reader service card

MIKE HOGAN

Notebooks Get Color

Epson, Toshiba, AST Show the Way

Mobile managers will get a look at a new category in October when vendors plan to show the first battery-powered color notebooks.

Color laptops are just the tip of total U.S. shipments despite new notebook versions.

Although many details are not yet finalized, Epson America seems furthest along. At COMDEX Fall, Epson will debut its NB-SL/25, which combines a 25-MHz Intel 386SL processor, two nickel-hydride batteries, and extensive power management for up to 3 hours of color computing, reports Product Manager Sandy Weisman. The active-matrix LCD—Epson's design—still gobbles three times as much power as monochrome notebooks, according to Weisman, who plans year-end shipments.

Meanwhile, Toshiba America is getting a notebook version of its T3200SXC laptop ready for COMDEX. The largest-selling active-matrix color portable to date, the T3200SXC is AC powered and has been in limited supply because of a shortage of active-matrix screens, reports Toshiba product manager Jeffrey Greenberg. Production yields are low and prices high because vendors have just one pass in the manufacturing process to bond almost a million transistors to each active-matrix display. Pixels on passive-matrix screens share transistors placed along the screen edge.

The likely continued scarcity is prompting AST to opt for an improved passive-matrix design, says Product Manager Bret Berg. AST plans a low-priced notebook identical in appearance to its Premium Exec 386SX/25. Buyers currently pay about $3000 more for active-matrix color and $1500 for passive-matrix. AST will use a 25-MHz AMD static processor, its own power-management software, and an improved battery to push the color premium below $1000, says Berg.

GORDON STUDER

Personal Lasers: More for Less

Lower prices and more features greet laser printer shoppers this month as Hewlett-Packard and its challengers get down to some serious competition for entry-level buyers. HP, which owns more than 60 percent of the personal (6-ppm and below) laser printer market, is introducing a successor to its standard-setting IIP. Dubbed the IIP Plus, HP's new laser has a 16-MHz processor instead of 10 MHz, a faster parallel port, and better paper handling. With a $1249 list price, the 4-ppm IIP Plus should sell on the street for around $800.

That's low, but not low enough to scare off Epson America: The $999 list price on its 6-ppm Action Laser II should translate into a street price below $750. With more than 6 million Epson dot matrix customers out there, Product Manager Carolyn Perrier figures that the Action Laser's price and added features give her company a good shot at raising the company's sub-5 percent market share into double digits.

Now's the time to push for more market share, says Marc Boer, senior analyst with BIS Strategic Decisions. Personal laser sales are expected to jump almost 50 percent between 1990 and 1992 to 950,000 units. Whoever captures the hearts and pocketbooks of entry-level buyers stands to keep them as this brand-conscious audience makes its work group laser-buying decisions, reasons Boer.

Hoping to improve on that, IBM's spun-off printer unit, now known as "Lexmark, an IBM alliance company," is introducing its Model 4029 series of four PCL 4–based lasers. Although they start at a somewhat pricey $1595 for a 5-ppm model, the units include fast ports, scalable fonts, and print-dot enhancements comparable to HP's III series.

Multimedia PC Tries to Lift Off

The Multimedia PC (MPC)—a midrange desktop that adds audio card, CD ROM player, and *Windows* multimedia software—debuts in October, with a dozen hardware manufacturers and 60 software vendors showing products. But while the MPC standard promises to make computers more powerful and accessible, even proponents expect relatively slow acceptance.

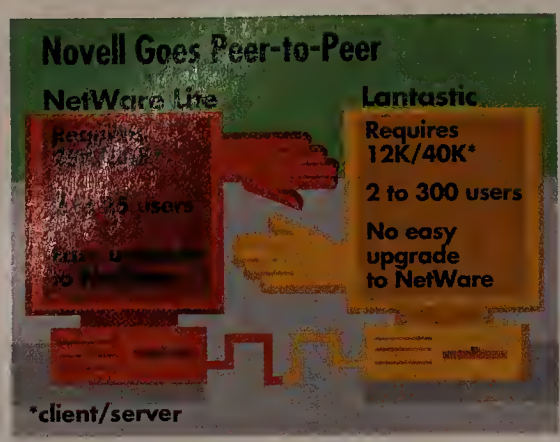
First out is Tandy, which has a line of Multimedia PCs that start at $2799 for a 16-MHz 386SX, about $800 more than for a similar non-multimedia Tandy PC. A CD ROM drive/single-board upgrade will be available for about $800 by December but still well in advance of many software titles. "We decided to put some hardware out there so we can get some good software," explains Radio Shack vice president Howard Elias, who notes that the cost premium makes MPC "really a business and education product initially."

But most business software developers "aren't too excited about MPC; it shoots kind of low for business applications," reports analyst Nick Arnett with Multimedia Computing. "We are not on the MPC bandwagon," agrees Rob Lippincott, director of Lotus's multimedia group, who points to technical limitations and questions about Microsoft's control over the technology. Microsoft allies disagree, one insisting that "Microsoft's interest is simply establishing a platform for its own content-publishing titles."

Lippincott feels consumers won't pay the hardware premium for access to early MPC software: "The stuff has to be outrageously good." It is, counters MPC Marketing Council manager Glenn Ochsenreiter, who insists MPC brings striking capabilities that "millions of PCs can use with a relatively simple upgrade. This marketplace can start now."

Novell Has NetWare Lite

Novell, the premier supplier of client/server network software, is venturing into the peer-to-peer arena with NetWare Lite, an inexpensive offering aimed at small businesses just starting to hook PCs together.



Novell is challenging peer-to-peer king Artisoft with $99-per-node net software of its own.

Available by November, the NetWare Lite operating system doesn't require a dedicated server, offers easier installation and administration than Novell's client/server NOS's, and provides an easy upgrade path to more advanced NetWare. At $99 per node, NetWare Lite also represents a dramatic drop in the entry point of that family (NetWare 2.2 pricing starts at $895 for five users).

NetWare Lite comes on a single floppy disk and installs in minutes, Novell claims. During an introductory period, it will be bundled with Digital Research's DOS-compatible operating system, DR DOS 6.0, which adds task-switching and disk-caching capabilities. Lite works on all NetWare-certified hardware and makes it easy for customers to move over to full-blown NetWare by running both NOS's simultaneously on the same PC.

NetWare Lite's prime competition is Artisoft's *Lantastic*, "which has seized leadership of the peer-to-peer market," notes Jamie Lewis, editor in chief of the *Clarke Burton Report*. Easy to install, use, and administer and with minimal memory requirements, *Lantastic* has elbowed aside offerings like Novell's discontinued NetWare ELS on its way to building an installed base of more than 300,000. It boasts features that Netware Lite lacks, such as disk caching and simple electronic mail facilities.

"The key question is, how good a product Novell can build?" says Lewis. He thinks Novell has enough to do providing directory services and network management on its client/server OS, not to mention smoothing the upgrade path from NetWare 2.2 (with most of the installed base) to NetWare 3.11. The peer-to-peer market offers new opportunities but also challenges, he adds: "NetWare dealers won't carry it; NetWare Lite has to sell in Egghead and Soft Warehouse, because that's where *Lantastic* is."

Ethernet, Token Ring Protocols Merged

Network administrators trying to maintain both token ring and ethernet LANs or trying to decide which standard to go with for new hardware purchases may have an easier time after the first of the year. Chips and Technologies (C&T) has introduced a new chip set that supports both protocols, letting its OEMs offer users a single adapter, network server, or other LAN hardware that can be easily installed and maintained on both types of nets.

LAN hardware standards show no signs of settling down, reports the Gartner Group. Users are buying ethernet and token ring LAN adapters in about the same proportion; and, even as those sales double to 8 million by 1995, they will still be split about 42 percent to 41 percent in ethernet's favor. With C&T's ChipsLAN, managers supporting mixed net environments don't have to choose.

ChipsLAN supports busmastering on 16-bit or 32-bit ISA, EISA, and Micro Channel buses. It doubles current token ring data transfer rates to 20,000 64-byte frames per second and offers a 15,000 frames-per-second rate via its 10BaseT ethernet protocol, reports Strategic Development Manager Farzin Firoozmand. It supports both 4- and 16-mbps token ring, coaxial cable, and thick or thin twisted pair.

ChipsLAN will deliver both leading protocols for the price of token ring alone. But users who plan to stick with 10BaseT networks, which are cheaper than token ring nets, may not be interested in a combination product, observes Steve Magidson, vice president of marketing for laptop LAN adapter maker Xircom. Scheduled to ship to Chips and Technologies OEMs by the end of the year, the two-chip set could appear in retail products during the first quarter.

Pen Hardware, Software Emerge

Momenta Corporation's pen notebook and Slate Corporation's announcement of software that moves PostScript documents onto pen PCs brought pen computing into sharper focus in October, but two major operating environments remain in beta.

Momenta took the wraps off a $4995 20-MHz 386SX, unique because it also includes software that lets a mobile executive start pen computing immediately. It will run both Microsoft's *Windows for Pen Computing* and Go Corporation's *PenPoint* when those operating systems become available by year's end. However, its own object-oriented environment already offers a full suite of desktop utilities and major applications such as a spreadsheet and word processor. Although available only in limited quantities until early next year, the Momenta covers every other point on the mobile manager's wish list—light weight, decent battery life, even an optional keyboard.

Meanwhile, Slate plans a spring 1992 release of *PenBook*, a two-part authoring tool that translates and compresses PC and Mac PostScript documents for use with *Windows for Pen Computing* and *PenPoint*. *PenBook* converts desktop-created documents—manuals, catalogs, price lists, and other materials—into "electronic books." Like a book, the documents can have a table of contents, tabs, and bookmarks and be marked up with a pen. The $695 *PenBook Author* translates PostScript documents for use by the $99 *PenBook Reader*, which will run under *Windows for Pen Computing* and *PenPoint*.

Analysts see slow growth despite such innovations. Although Grid Computer has sold more than 10,000 systems and NCR is now shipping its clipboard-type entry, analysts at a Technologic Partners conference on pen computers expect U.S. shipments of 100,000 to 300,000 units in 1992, rising to about 1 million shipments a year in 1995.

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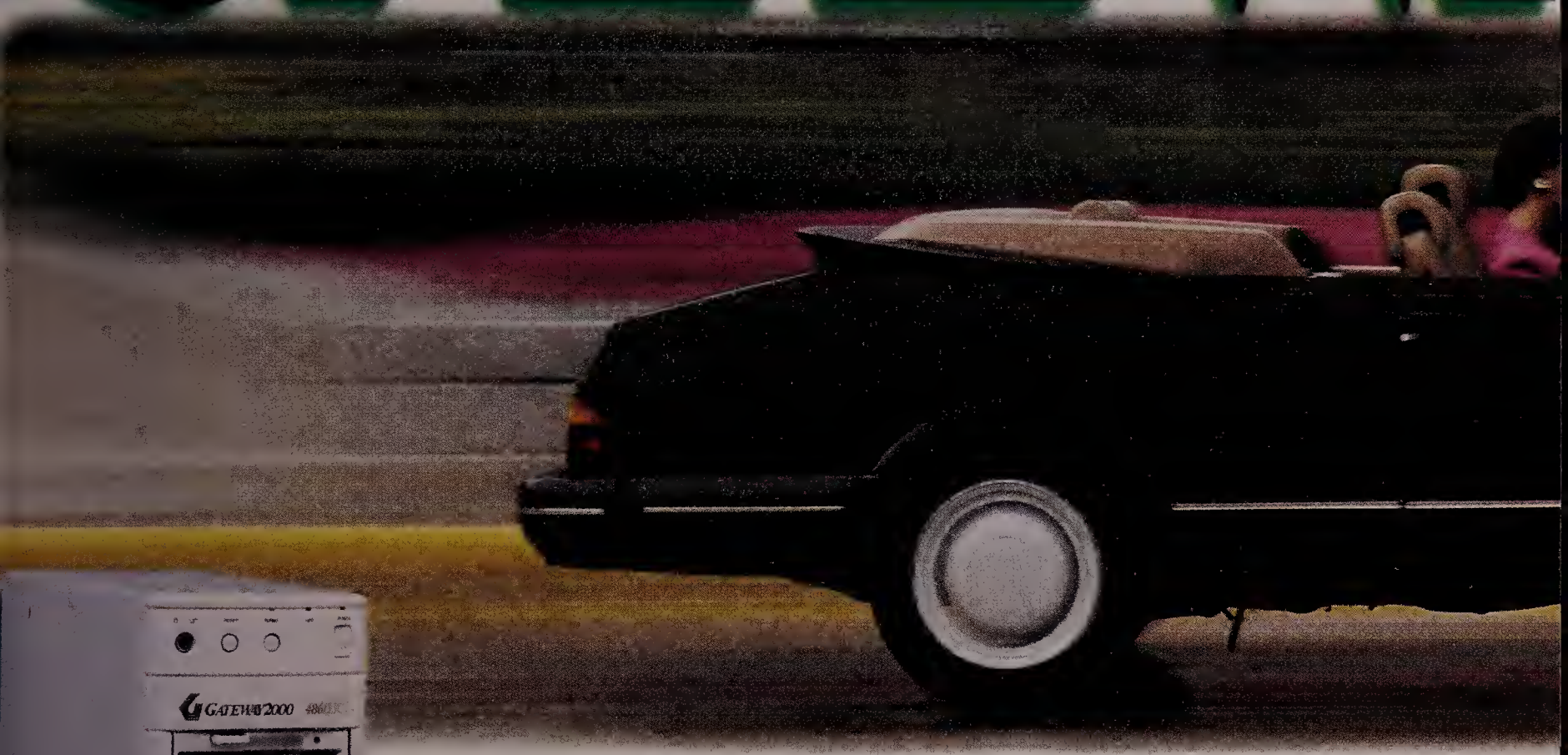

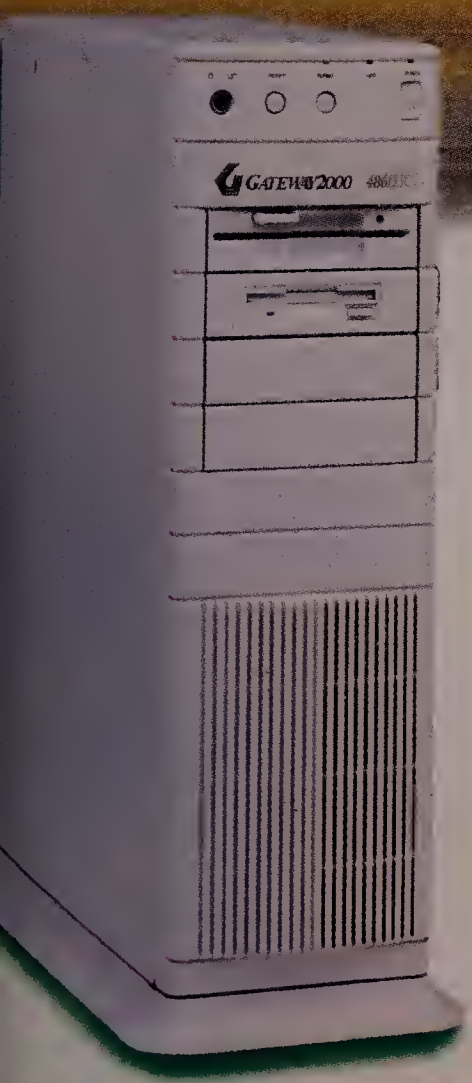

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Gateway 2000's tireless efforts to bring you the best value have resulted in unbeatable features, performance, and prices.

Gateway was one of the first companies to make a non-interlaced color monitor standard with 386DX and 486 systems. No increase in price.

Other custom keyboards pale compared to Gateway's 124-key programmable AnyKey™. And unlike other custom keyboards, the AnyKey is standard with all Gateway 2000 systems. No increase in price.

Gateway 2000 was one of the first companies to break the $4,000 barrier in 486 system prices. Now our 486 models are selling for prices you'd expect to pay for 386 systems. While some companies are promoting 486SX models as the affordable 486, Gateway is offering you a true 486 at a better price.

On all SX and DX systems, a Microsoft® mouse and Windows™ 3.0 are standard. MS DOS® 5.0 comes standard will all systems. With Gateway, you don't pay extra for the tools you need to get the most out of your computer.

Gateway customers told us they liked the price and performance of their systems, but they weren't crazy about the "plain vanilla" looks of Gateway computers. So we introduced an entirely redesigned product line with unique, contemporary-looking systems. No increase in price.

Our customers told us they wanted a small footprint model with room for expansion. So we introduced a space-saving mini desktop model for 286 and 386SX systems with five 16-bit slots open in the standard configuration.

Customers are telling us they want a Gateway 2000 notebook. The best is yet to come.

AY 2000

EFFORTS TO GIVE YOU THE BEST VALUE

We're tireless in our efforts to offer you the best value in the industry because we're on a mission. Our mission is to make Gateway 2000 the only logical choice in microcomputers. To achieve this ambitious goal, we must continue giving you what you want: great prices on quality, high-performance products, backed by excellent support policies and our award-winning technical service people. With Gateway, you can have it all. In the race for leadership in the computer industry, the real winner is you!

Gateway 2000's tireless efforts to offer the best value in the industry convinced the world-famous Pirelli® Armstrong Tire Corporation to buy Gateway computers. "They never raise their prices," said Gary Boyd, Controller for Pirelli, from his office in Hanford, California. "Gateway is continually improving the quality of their products and services, and yet their prices keep going down."

Pirelli uses Gateway systems in every department. "The engineers in particular love them," Gary commented. "They run Gateway 486 systems as CAD workstations to design products, equipment and plant facilities."

Pirelli people are taking Gateway systems home with them, too. Last year the company hosted a computer fair to give employees a chance to compare various computer brands on the market. "Our factory manager bought a Gateway for home, as did the manufacturing manager, four of the engineers and myself, just to name a few," said Gary. "Even with all the competition at the fair, Gateway 2000 clearly offered the best value."

Gary Boyd
Pirelli Armstrong
Tire Corporation

GATEWAY 2000

16MHZ 286

- 80286 Processor
- 2 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 40 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
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- 124-Key AnyKey™ Keyboard
- MS DOS® 5.0

$1345

16MHZ 386SX

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- 2 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 40 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
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- 80 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0

$1795

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- Intel 80386 Processor
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 80 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0

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- Same features as our 33 MHz 486 system except this machine has 4 MB RAM, instead of 8, and a 120 MB IDE hard drive, instead of the 200 MB drive in our standard configuration.

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33MHZ 386

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- 64K Cache RAM
- 4 MB RAM
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- 200 MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1 MB
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- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0

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33MHZ 486

- Intel 80486 Processor
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- 1.44 MB 3.5" Drive
- 200 MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0

$2995

33MHZ 486 EISA

- Intel 80486 Processor
- 128K Cache RAM
- 8 MB RAM, Expands to 64 MB
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
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- 32-Bit EISA SCSI Controller
- 16-Bit VGA with 1 MB
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- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
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- The programmable AnyKey keyboard is standard; a 101-key keyboard is also available at no extra charge

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Includes 32-Bit EISA SCSI Controller

Gateway's price is especially remarkable when you consider that this EISA system comes with a 32-bit EISA SCSI controller – an expensive option with most other manufacturers' EISA computers. The EISA SCSI controller makes disk operations lightning fast. Other SCSI options are also available.

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The 486-33 EISA is ideal for use as a file server and for high-end CAD, workstation, and network applications. It's also the best computer on the market if you want the security of knowing you've planned well for the future.

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The EISA system includes Gateway's non-interlaced Crystal Scan monitor, designed for flicker-free video display. The Crystal Scan 1024NI has a 14-inch non-glare tube, 0.28mm dot pitch with 1024 x 768 resolution at 60 Hz, 800 x 600 at 72 Hz.

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Wrong.

"you need look no further than *FoxPro*, Version 1.02.

This $795 database from Fox Software has succeeded *dBASE* as the industry leader in innovation, power, and speed—a winning combination t"

–*PC Magazine 5/28/91*

Write.

Don't get us wrong –we love the quote. And FoxPro 1.02 really was that good.

But we've just released FoxPro 2.0. And it's more innovative, more powerful, and far, far faster.

You'll have to write (or call) for details, but here are some of the highlights:

In tests against IBM's DB2 on a mainframe, FoxPro on a PC was 4 times faster querying a million-record, 200 megabyte database.

And against other PC database management systems like dBASE and Paradox, it's devastating, thanks to our patent-pending Rushmore™ query optimization techniques.

The DBMS that acts like a Mac and runs like a mainframe. In DOS.

On top of its state-of-the-database-art performance, FoxPro 2.0 with its CUA-like interface gives you the ease-of-use of a Graphic User Interface (GUI) on your character-based DOS PCs.

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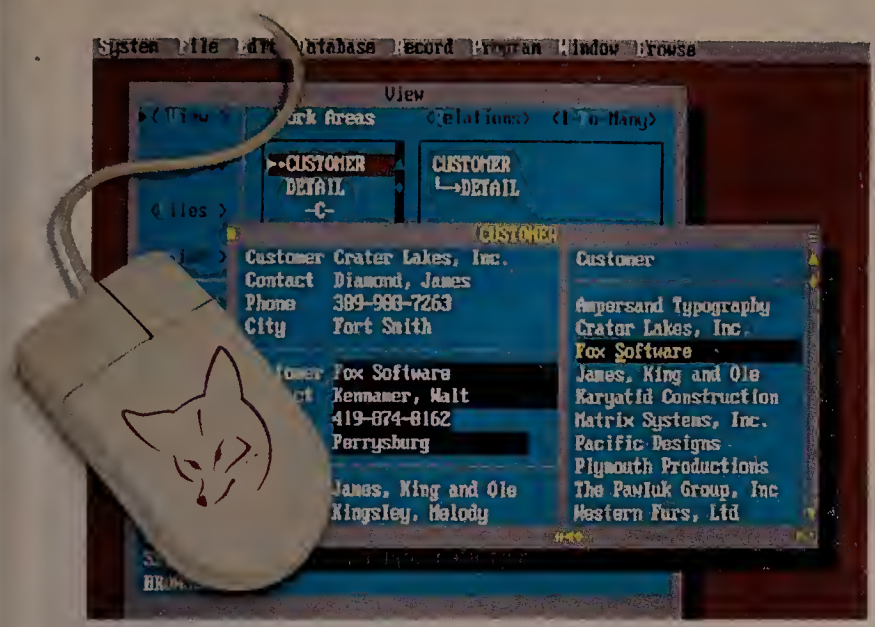
Our Fourth Generation Language (4GL) tools make screens, menus, reports and labels a snap. Create your own custom data entry and viewing screens just by picking-and-clicking to position data, buttons, check boxes and scrolling lists



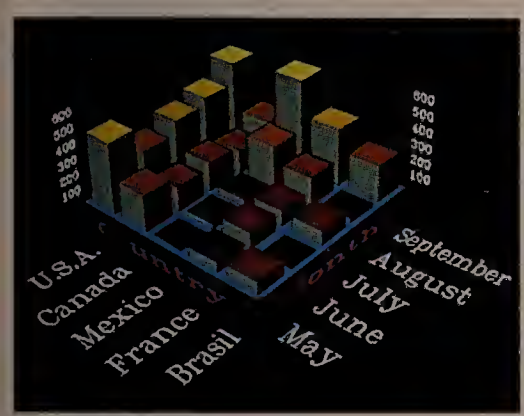
anywhere you want them. Then assemble everything into your own custom applications without writing a single line of programming code.

But that's only the tip of the iceberg.

Our new demand paging memory management works with the memory you have now while speeding up your single-user and networked applications.

Our new compound indexes are as small as a quarter the size of those in competitive products and far, far faster.

Our new Relational Query-By-Example (RQBE) is a simple, interactive interface to the information you need. Unlike other query systems, RQBE lets you browse the answer table, or create an instant database, report, labels or a business graph (with our optional FoxGraph or other graphic program).



Behind its friendly exterior, RQBE creates an efficient SQL SELECT statement you can add seamlessly to any of your applications. And do the same with our new SQL INSERT and CREATE TABLE commands, too.

We've added over a hundred new and enhanced commands and functions, including one-to-many-to-many relations, new array handling, and a BROWSE FOR command that could be the basis for an entire application itself.

We've added a new project manager that keeps track of all the needed files and any changes then automatically builds your applications (and EXE files with our optional Distribution Kit). And an API (Application Program Interface) that lets you dynamically link to libraries written in C or assembler (Library Construction Kit optional) using a single FoxPro command.

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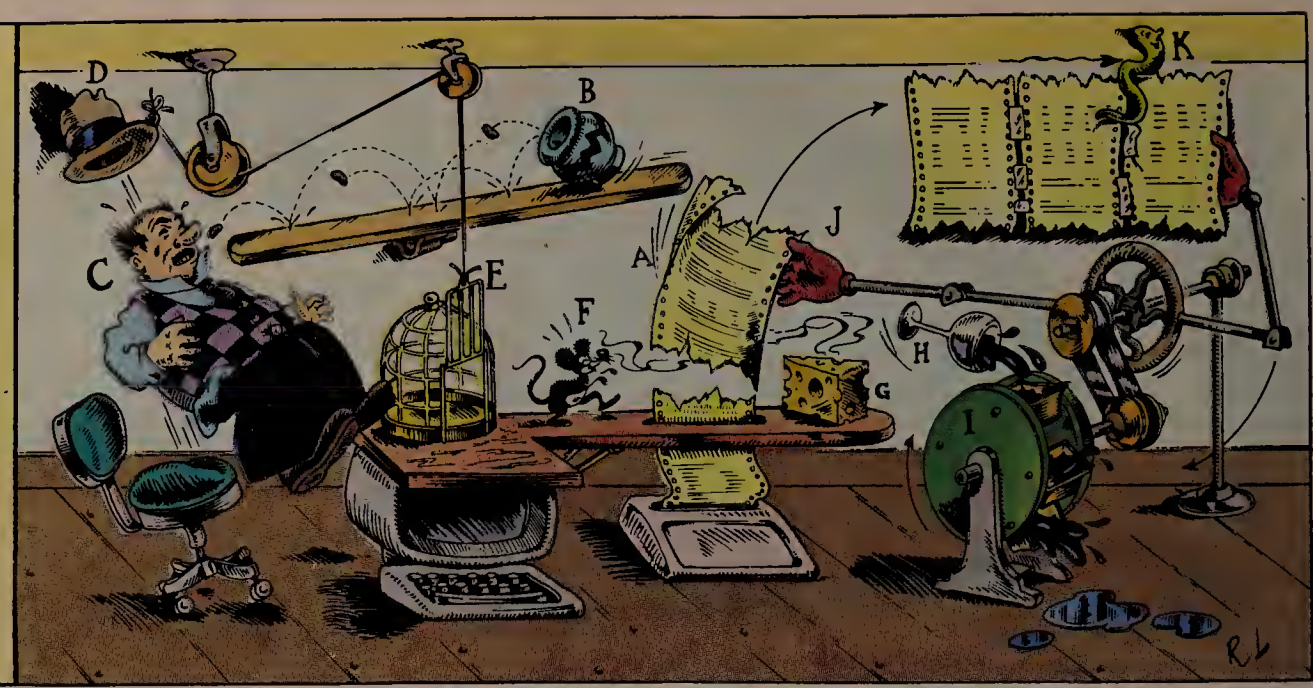
Circle 76 on reader service card

RISING SPREADSHEET (A) KNOCKS MEXICAN JUMPING BEANS (B) INTO MOUTH OF NEUROTIC MAN (C) WHO IS SO DISCOMBOBULATED THAT HIS HAIR STANDS ON END, DISLODGING HAT (D) WHICH OPENS CAGE (E) AND RELEASES EPICUREAN MOUSE (F).

MOUSE, INSPIRED BY SCENT OF PERFECTLY AGED CAMEMBERT CHEESE, GNAWS THROUGH SPREADSHEET, ONLY TO DISCOVER HE HAS BEEN FOOLED BY AROMA OF OVER-RIPE GORGONZOLA (G).

IN A FIT OF PIQUE HE SPILLS VINTAGE WINE (H) INTO WATER-WHEEL (I) WHICH TURNS PULLEY THAT CAUSES GLOVE (J) TO GRASP SPREADSHEET AND MOVE IT TO TAPING AREA.

SHEET IS TAPED SECURELY IN PLACE BY TRAINED ADHESIVE TAPE WORM (K).



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Sideways version 3.3 works with all releases of 1-2-3 as well as other software. Add-in capability requires 1-2-3 Release 2, Release 3, or Symphony.

Circle 148 on reader service card

LETTERS

Reactions and responses from the PC World community

SANDRA DIONISI

The E-Mail User Group Connection

Hello, *PC World!* Many thanks for the listing of user group addresses in August's *Consumer Watch* column. I'm responsible for all software development and support in a U.S.-Soviet joint stock company. Last summer we started the first Nantucket-certified *Clipper* user group in St. Petersburg. Then we set up a BBS, joined FIDO, and got an Internet account. We would like as many user groups as possible to contact us by sending Internet E-mail to agh@jvd.spb.su; FIDO to Arcady Khotin 2:5030/8; or letters to 12-36 Dmitrovsky per. St. Petersburg 191025 Russia. But we really need an E-mail connection with other user groups. Can you help us out?

Arcady Khotin
St. Petersburg, Russia

The Association of PC User Groups (APCUG) is an E-mail communications hub for more than 200 user groups around the world. For a $25 annual membership fee, a group gets a free Tymnet account for group officers so you can exchange free E-mail almost anywhere in the world through the association's BBS. Contact APCUG at 1730 M St. NW #700, Washington, DC 20036, or dial up their BBS at 408/439-9367 or 408/439-9371 (settings N-8-1) for more information. —Ed.

Charity Comes Home

In August *Letters* you mentioned that you were unable to find a national domestic institution to match IDG's East-West Education Development Foundation, which provides cast-off computer equipment to Eastern European students. Let me introduce you to Educational Assistance Limited (EAL). In seven years EAL has generated $9.1 million in tuition credits by helping to broker used and unwanted equipment from business donors. Corporations receive up to twice the book value of their donations as tax credits, and to date we've helped 987 students graduate from U.S. colleges. Contact Mark Brumbach, EAL National Coordinator, 10228 Conser Ave., Overland Park, KS 66212 for more information.

Donald D. Taylor
Topeka, Kansas

CompuServe Password Bandits

Recently I received a phone call from CompuServe (or so they claimed) requesting my password because of a mistakenly deleted file. Trustingly, I gave it. But fortunately I called CompuServe to check and found out I'd been hoodwinked. CompuServe closed my old account and refunded what these bandits had spent. The moral: Never give your password to *anybody.*

Alex Lefort
Montreal, Quebec, Canada

Thanks for the Utility

Thanks for MF.COM, the utility program in August *Star-Dot-Star* that shows how much space is left on a hard disk and how much memory is free. The utility is much quicker than CHKDSK and needs a lot less memory to work. Also, its output is dead-on running under DOS 5.0.

Richard Jehn
Edmonton, Alberta, Canada

Norton Utilities 5.0: A Useless, Expensive Utility?

July *PC World* strongly recommends both DOS 5.0 and Best Buy *Norton Utilities 5.0* ["DOS Does It Right" and "Hard Disk Defenders"]. I followed your suggestions and bought both programs right away. I've been very pleased with DOS 5.0, but I think *Norton Utilities 5.0* is a useless, expensive program. Why? Because it's not compatible with DOS 5.0 or with *Windows 3.0.* Two weeks after I bought version 5.0, I saw *Norton Utilities 6.0* (compatible with DOS 5.0 and *Windows*) on sale. Why didn't you outline these severe deficiencies in version 5.0 and let us know that version 6.0 would remedy them? Now I'm stuck with an unusable product on your recommendation.

David M. McInerney
Monroe, New York

It is our policy to evaluate only products being sold at time of review, and neither DOS 5.0 (previewed in July)

(continues)

ANTHONY RUSSO

An Apology

In September's "Thumbs Up for Lightweight Laptops" article, a significantly misleading percentage was stated regarding a reader survey on notebook customer loyalty. The survey was based on a total of 100 *PC World* readers. Of those, only five were AST customers, and two said they would not buy another AST unit. The writer inferred from *two* buyers that 40 percent of AST's installed base would not be loyal customers. This is not a statistically representative or significant sample to make such a generalization, especially because the survey was taken in May, after AST's product had shipped for only a few months.

AST is gaining in notebook market share and is ranked second by Scoreboard with 18.3 percent of 386SX notebooks sold through dealers. This is because of the great demand and popularity of AST's Premium Exec and its excellent customer service and support, which includes six-day-a-week, toll-free phone support and 24-hour support via fax or electronic bulletin board.

In a recent J.D. Powers survey of the computer industry, which is a statistically representative sample of 1784 small and medium-sized businesses, AST ranked third, ahead of Compaq, IBM, and all the other companies included in your survey. AST ranked highest in customer satisfaction for ISA-based computers sold through the reseller channel.

AST cares about its customers and would like the record corrected to assure future buyers of the quality and satisfaction they look for when buying from AST. AST has shipped over 30,000 notebooks, so 40 percent would mean more than 12,000 users—not two.

Genelle Trader
Director of Marketing for Portable Systems
AST Research

Editor's response: Regrettably, Ms. Trader's criticism of September's "Thumbs Up for Lightweight Laptops" is entirely deserved. While the percentages mentioned correctly reflected the data, they were without significance because of the small size of the sample. Data about laptops from Everex, IBM, Texas Instruments, and Zeos was also based on samples too small to support meaningful projections. Somehow during the passage of information from an outside research firm to *PC World*'s former research director and then to *PC World*'s editorial department, any warnings made about the small sample sizes were lost.

We at *PC World* take this lapse in fairness and accuracy very seriously. In addition to revamping our survey process, we have commissioned another laptop survey with much larger samples, and we will publish those results as soon as possible. We apologize to our readers and to the vendors affected by our survey for allowing the original projections to appear in print.

Philip Lemmons
Editor in Chief

nor Norton Utilities 6.0 *shipped until well past press time for our July issue. In fact, even the announcement of Symantec's* Norton Utilities *upgrade came too late for mention in July. Best Buy* Norton Utilities 5.0, *however, still stands out among the utilities reviewed in July, and it is compatible with* Windows 3.0 *and DOS versions 2.01 to 4.01. It's true that some components of* Norton Utilities 5.0 *are incompatible with DOS 5.0, so Symantec recommends that DOS 5.0 users upgrade to* Norton Utilities 6.01.

If you bought Norton Utilities 5.0 *after April 10, contact Symantec for free upgrade information. Otherwise, an upgrade costs $49. —Ed.*

Super-VGA Board Q&A

Your August review of super-VGA boards ["Screen Gems: Super-VGA Boards"] brings up a question: You say the Boca SuperVGA delivers flicker-free 72-Hz screen refresh at all resolutions except 1024 by 768. That makes the board a match for 14-inch multiscan monitors, such as Seiko's CM 1440, that can run at 72 Hz at 800 by 600. I have the Boca/Seiko setup, but it won't refresh at 72 Hz in 800-by-600 mode. What's wrong?

Brian Goodwin
Holyoke, Massachusetts

Thanks for the "Make Your Monitor Flicker Free" sidebar to your super-VGA boards review. I now understand what makes a monitor flicker free, but what kind of display should I use with one of the three Best Buy boards [ATI VGA Wonder XL, Boca SuperVGA, STB PowerGraph Ergo-VGA]? And what justifies the extra expense of a noninterlaced monitor?

Marcelo Nogueira
Santa Cruz, California

Mr. Goodwin has an older Boca SuperVGA with a different BIOS than the model we reviewed. Boca SuperVGA owners who bought their units before May 1991 can contact Boca Research to obtain upgrade information. Mr.

(continues)

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- 1.44 MB 3.5" Teac FD
- 4 MB (60 ns) System RAM
- 131 MB IDE Hard Drive w/ 32K Cache 18ms
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- 16 Bit VGA 1Meg RAM
- Parallel/Game/Serial Ports
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- 16 Bit VGA 1Meg RAM
- Parallel/Game/Serial Ports
- Microsoft DOS 5.0
- Windows 3.0 w/ Mouse
- Tower or Desktop Case
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Circle 189 on reader service card

Nogueira will find that any multiscan monitor, including the popular MultiSync 3D, can display flicker free at standard 640-by-480 VGA resolution. But he'll need a newer multiscan, like the 15-inch NEC 4FG ($899) or Dell's GDP-16C ($999), to achieve flicker-free performance at either 800-by-600 or 1024-by-768 resolutions. Finally, a noninterlaced monitor costs more, but because it has faster electronics, it paints the screen in a smoother fashion that's much easier on the eyes.

—TJ Byers

A New Crop of Notebooks

I'm on the staff at Texas A&M University's Agricultural Experiment Station. We're in the market for a 386SX notebook computer, and we've been following your reviews avidly. In a sidebar to your May review "386SX Notebooks: Portable Powerhouses," you listed a bunch of notebooks that had shipped too late to be included. Are you going to be reviewing more SX notebooks? It would be great to see a comparison of the latest machines before we make our purchase.

Kathy Young
Vernon, Texas

Turn to "20-MHz Notebooks: SX Roadrunners" in this issue to get our recommendations on the latest crop of fast featherweights. And as the choice of SX notebooks increases, you'll be able to (continues)

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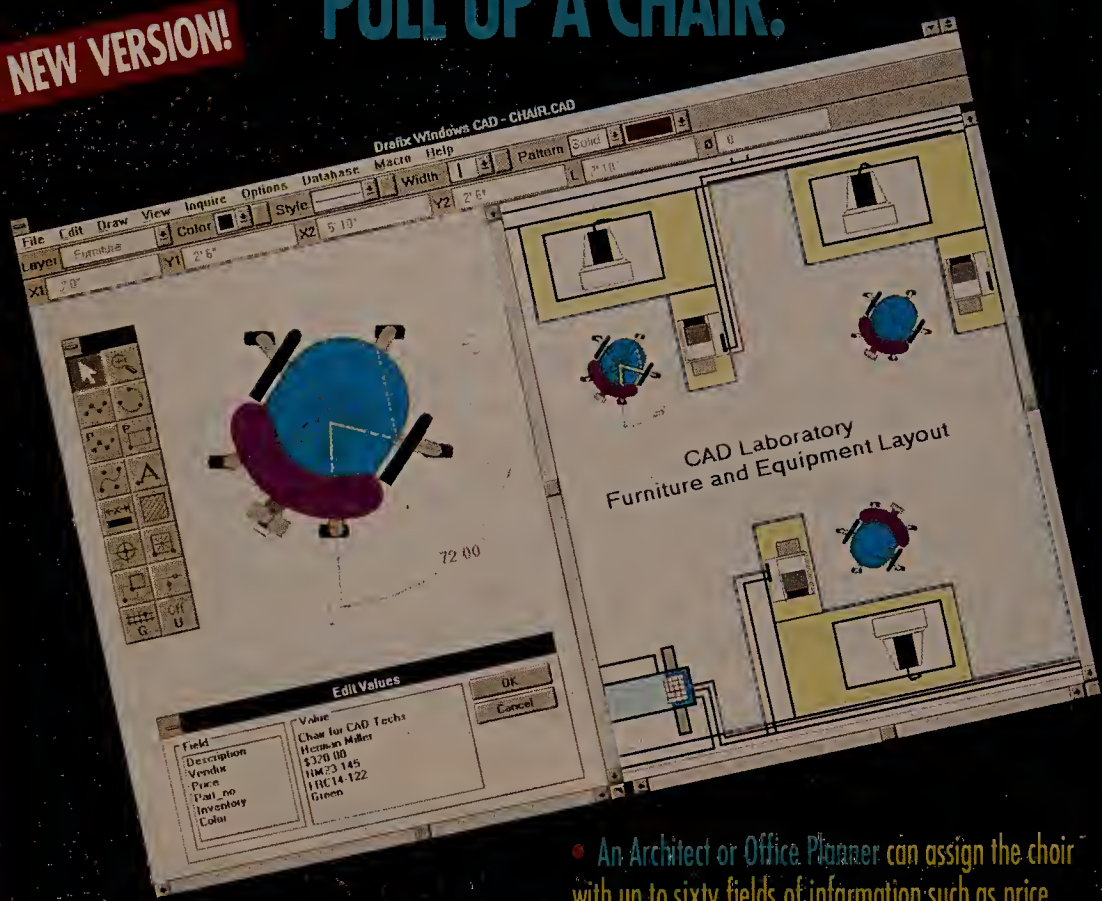

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Circle 153 on reader service card

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Chris Antley
West Columbia, South Carolina

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* March 1991 study published by 1Soft Decision, Inc., including CA-SuperProject 2.0, Microsoft Project For Windows, Symantec's Timeline 4.0, ABT Project Workbench and Scitor's Project Scheduler-5.

Circle 39 on reader service card

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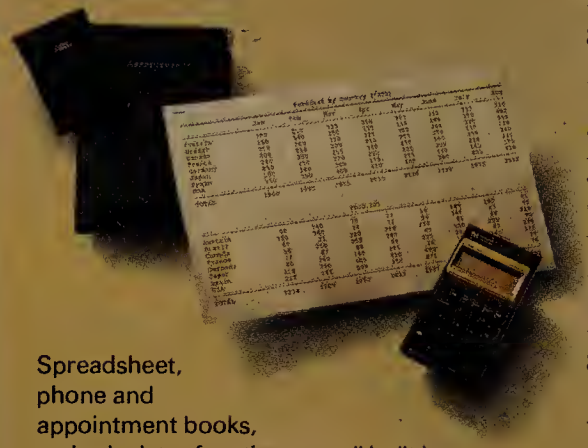

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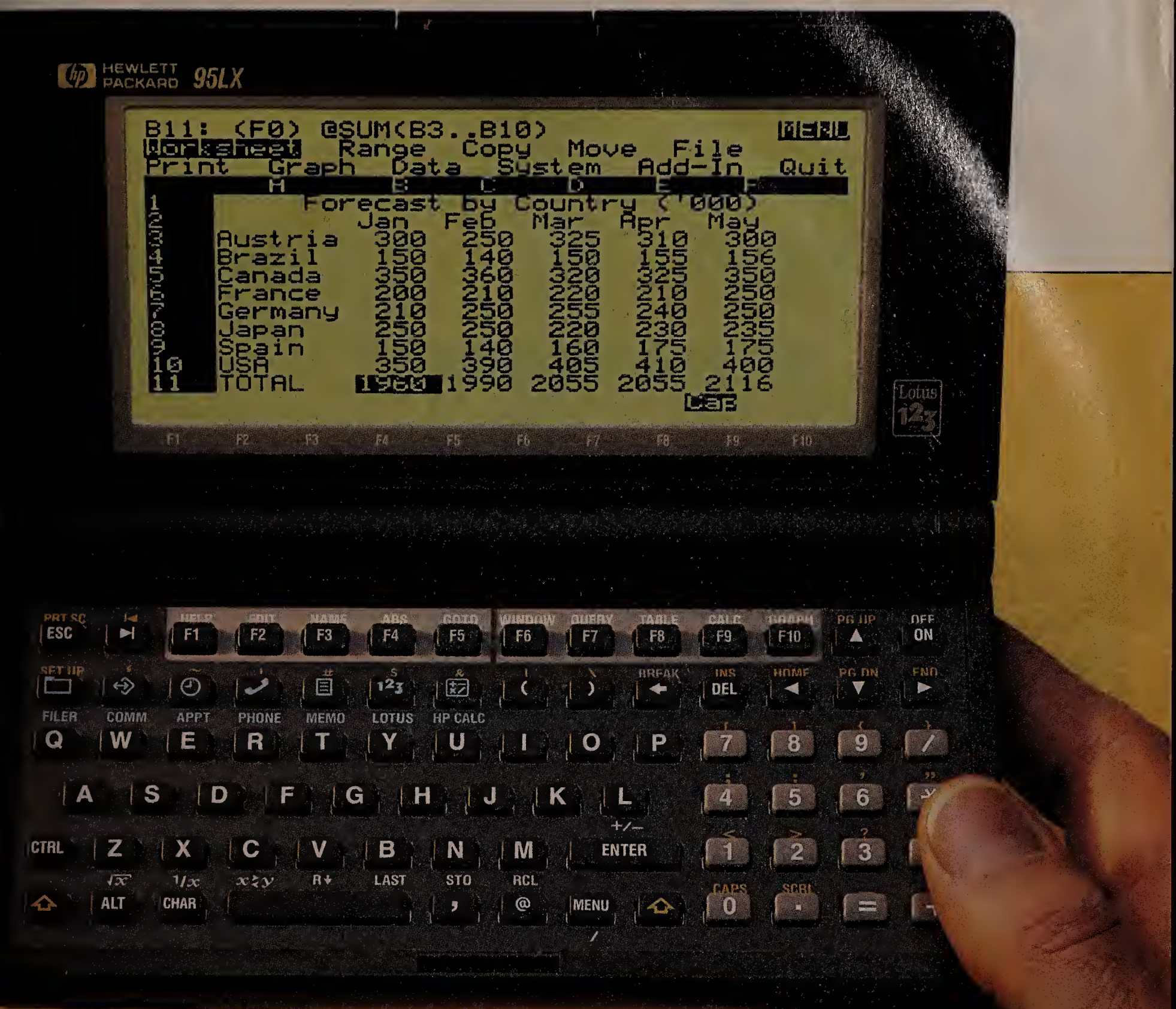

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Circle 90 on reader service card

cultivate your awareness further with reviews in issues to come. —Ed.

Windows Road Test

"Road Test: Windows 3.0" in August was refreshing in that it contained some negative comments about *Windows*. Your past coverage of this operating environment has been so positive that I was starting to wonder if *PC World* was owned by Microsoft. I've had more than ten years' experience with DOS-based computing, and I consider *Windows* to be one of the worst purchases I ever made. After trying it on several machines, I threw it out.

J. C. Randolph
Bloomington, Indiana

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Relevant Notepads

Your August *Top of the News* report "NCR, Grid Offer Notepad Blueprint" omits relevant information. The item doesn't mention, for instance, that Grid's two new units have the first backlit display on a pen-based computer. And while you point out the NCR 3125's 6-hour battery life, you don't note GridPads' battery life of up to 8 hours. You also state that the NCR's 386SL processor is more representative of the power needed for notepads, but Grid doesn't believe you need a 386 to get tremen-

(continues)

POWER TIP NO. 220

Copy 1-2-3 Formulas Quickly

When you copy a spreadsheet formula, the cell references shift to reflect the new position of the copy. But sometimes you don't want the formula to adjust its cell references—when you want to duplicate an important result in another area of the worksheet, for instance. You could use absolute cell addresses, but if you just want a simple copy, there's a quicker way: In *1-2-3* or *Quattro*, position the cell pointer on the formula, and press <**F2**>. Press <**Home**> to move the cursor to the beginning of the formula. Type an apostrophe, and press <**Enter**>. The apostrophe converts the formula into a label, which you can copy freely without adjusting cell references. After copying, remove the apostrophe from both the original and the copy by pressing <**F2**><**Home**><**Delete**><**Enter**> at each cell.

Richard Scoville
Contributing Editor

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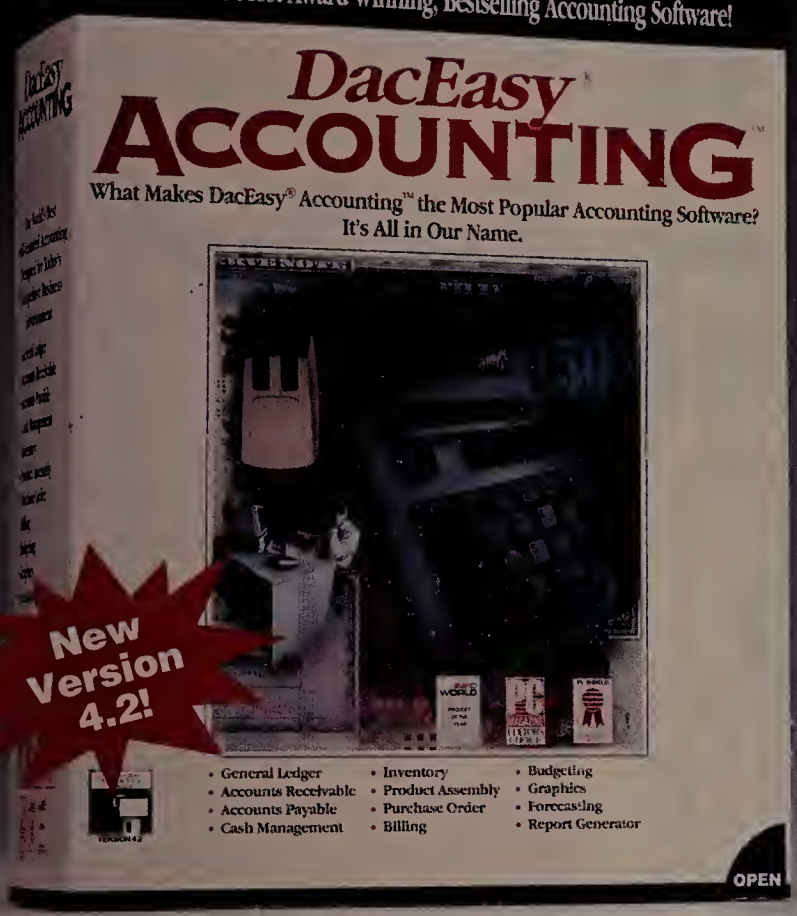

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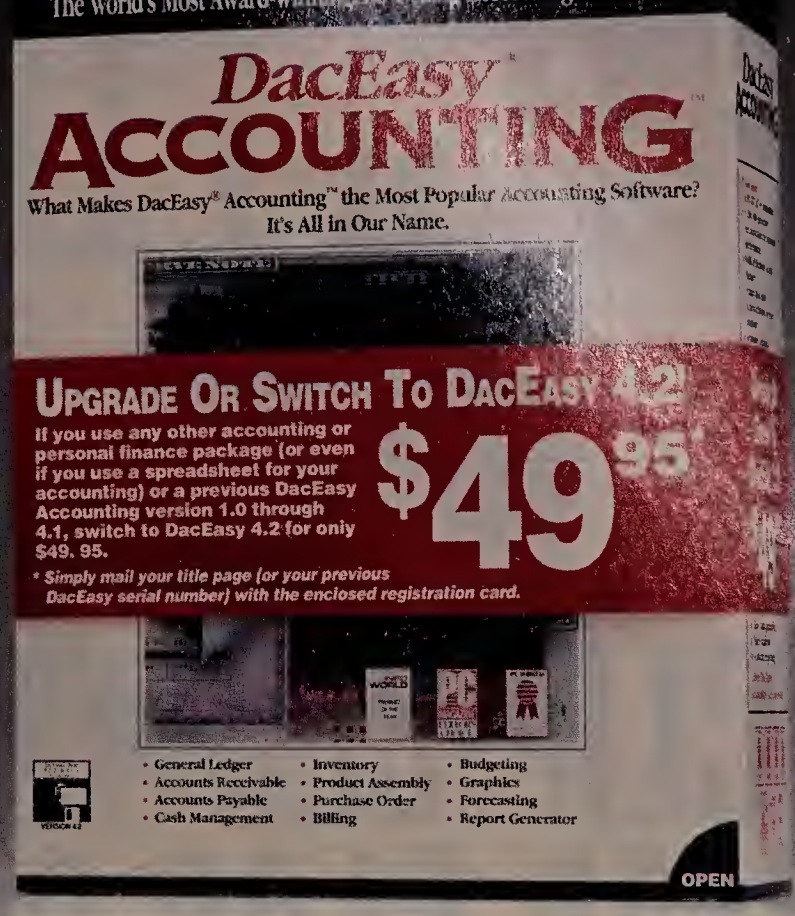

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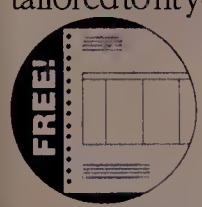

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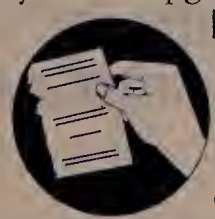

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dous value out of pen software applications. Our many Fortune 1000 customers agree.

Bob Goligoski
Grid Systems
Fremont, California

Thank you for pointing out the GridPads' additional features. Top of the News *items are not reviews, however, nor do they claim to be comprehensive. Given our space limitations, we highlight only the features we deem most important. —Ed.*

Corrections and Clarifications

After our September preview "A New Plain in Color Printing" went to press, Tektronix changed the name of its printer to Phaser III PXi. For information contact Tektronix at 800/835-6100.

We misspelled Munir Mandviwalla's name in August's Road Test. He is a part-time lecturer at California State Polytechnic University, Pomona.

Send your reactions, responses, and ideas to Letters, PC World, *501 Second St. #600, San Francisco, CA 94107; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Include your name, city, state, and phone number. We reserve the right to edit letters.*

POWER TIP NO. 221

Getting Sidekick Plus to Give Back Some RAM

The *Sidekick Plus* Phonebook module has a Background Communications option that can eat up almost 25K of conventional RAM. If *Sidekick Plus* is consuming more than 75K of conventional RAM, chances are the Background Communications mode is turned on.

To shut it off, remove *Sidekick Plus* from memory and run the Install program. Select *Design New Skplus Continue Skplus Design*. Press <Enter>Y to accept the default name for the program file, SKPLUS.EXE, or type another name. Select *Phonebook*, answer n to the 'Background communications' question, and select your modem. Press <F2> to create a new EXE file and <Esc> to exit the program. The next time you load *Sidekick Plus*, it will take considerably less conventional RAM.

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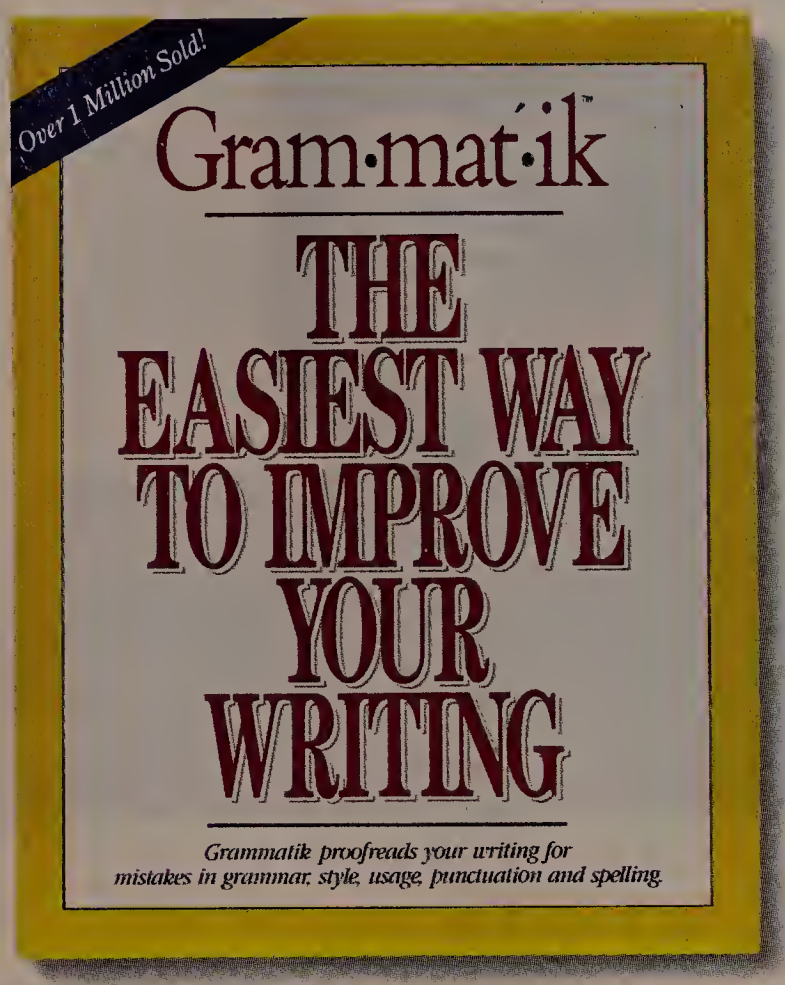
Grammar



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Memory (Std./Board Max.)	2MB/16MB	4MB/32MB	4MB/64MB	8MB/64MB	1MB/8MB
Expansion Slots	4 open 16-bit ISA	3 open 32-bit EISA	3 open 32-bit EISA	8 open 32-bit EISA	2 open 16-bit ISA
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Ports	2 serial, 1 parallel	2 serial, 1 parallel	2 serial, 1 parallel	2 serial, 2 parallel, 1 mouse	2 serial, 1 parallel
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Karl Koessel and Robert Lauriston

1MB Versus 4MB SIMMs

Q. *I own a 16-MHz 386SX and want to upgrade its memory. The manual says the system can address up to 16MB of memory, but the system's maximum fast RAM capacity is four 1MB SIMMs [single in-line memory modules]. Since 4MB SIMMs fit in the same sockets, couldn't my system actually handle 16MB of fast RAM?*

Bob La Pierre
Great Bend, Kansas

A. Though 1MB and 4MB SIMMs use the same sockets, they're not interchangeable—which SIMMs you can install depends on the system's design. Your system, like many 386SXs, has four SIMM sockets that can hold either two or four 1MB SIMMs. Because it can't use 2MB or 4MB SIMMs, you must plug a memory board into an expansion slot to expand memory past 4MB. Access to expansion slot memory is slower than access to memory on the motherboard or on a card in a dedicated memory slot. Faster 386DX and 486 systems often accept 2MB, 4MB, and even 8MB SIMMs and may have eight or more SIMM sockets to hold the large amounts of memory needed when they're used as network servers.

From Mac to PC and Back

Q. *My company recently purchased several Macintoshes. All our other computers here are PCs running DOS, and we don't have a network. On the Macs, we run* Microsoft Word *and* Excel. *What hardware and software do we need in order to take files from these apps, modify them on our DOS machines, and return them to the Macs?*

James C. Carlson
Portsmouth, Virginia

A. Macs manufactured in the last couple of years can read and write 1.44MB 3½-inch DOS disks. This isn't obvious because DOS floppies don't pop up on the screen as icons the way Mac floppies do. Instead, you have to use the Apple File Exchange utility included with the Mac system software to copy files from the Mac's disk to your DOS floppy and back.

Word on the Mac can export and import DOS *Word* files. Most other popular PC word processors can also read and write *Word* files, either directly or by running a separate conversion utility, such as *WordPerfect*'s CONVERT.EXE. All Mac and PC spreadsheet programs can read and write *1-2-3* format (WK1) files. Note, however, that Mac and PC versions of *Excel* can't read each other's files directly—you must save them as SYLK or SLK (an option in the Save As dialog box) to move them from one platform to the other. Also, the PC and Mac versions of *Excel* use different date systems, beginning with January 1, 1900 and January 1, 1904, respectively. When viewing a Mac-generated worksheet on the PC, select *Options Calculation*, and check the 1904 Date System box listed under Sheet Options.

Install an IDE Adapter Board

Q. *The 65MB RLL hard drive in my computer recently failed. I'm considering replacing it with an IDE drive. Would the new IDE controller work with my existing floppies? Can I keep my old RLL controller and use it to run a second hard drive?*

Robert Spiridgliozzi
APO, San Francisco

A. A combination IDE adapter/floppy controller board should work fine with any standard floppy drive. (The IDE board is called an adapter because the controller electronics are built into the drive itself.) You can install only one IDE adapter in a system, and it won't coexist with an RLL or MFM controller. However, you can run two IDE drives off one adapter. Also, many SCSI adapters and ESDI controllers can coexist peacefully with IDE drives.

No Extended Memory in an XT

Q. *I have an XT turbo clone with 640K RAM. Some of the software I want to use requires more than 640K of memory. I have asked the local computer outlets about extra memory, but no one can tell me if it is possible to add extended memory to an XT. Can it be done and, if so, how?*

Tom Cantrell
via CompuServe

A. The XT and its clones are built around an 8088 processor, and that chip's 20-bit address path limits the amount of memory XTs can directly ad-

(continues)

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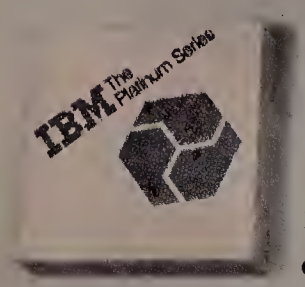

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dress to 1MB. (IBM's design reserves 384K of that memory space for system use, so only 640K is available for use by your software.) Because extended memory is directly addressed RAM *above* 1MB, an XT's processor can't use it.

You can install an *expanded* memory board in an XT, but only certain programs can use expanded memory. Your XT can't run software that requires extended memory (such as *1-2-3 3.x* or *AutoCAD*) or software that requires a 286, 386, or 486 (such as *DesqView 386* or OS/2). If you want to use such software, you'll have to upgrade to a new system.

Catproof Your Computer

Q. *I have a PC in my home that my wife and I share with two cats. What precautions should I take to protect my equipment from our curious family felines?*

James G. Finley
Gresham, Oregon

A. First, set up your system so that your pets can't accidentally knock anything over—to cats, a warm monitor or CPU may seem like a perfect spot for a snooze. If either cat likes to chew on things it shouldn't, keep the cables out of reach. Otherwise, the biggest pet threat to your PC is the cats' fur, which can accumulate in floppy drives and jam them. Cats or no cats, it's always a good idea to cover your computer and printer when not in use. Doing so keeps out not only fur, but also dust, which is also bad news for your system. A small piece of cloth hung in front of the drive bays should stop most of the incoming hair. If you notice hair accumulating in your keyboard, *blow* it out (avoid vacuuming, so you won't have to dig through dust to find a key cap).

Displaying Underlined Text

Q. *I've been told that on a monochrome monitor, underlined text in word processing documents should appear underlined on screen. On my PS/2 Model 25, it doesn't. Why?*

George W. Crumley, Jr.
Merrick, New York

A. The terminology used to describe monitors is confusing. IBM's original *text* monitor is called the Monochrome Display. Today, many systems have single-color *graphics* monitors. The Monochrome Display and its clones display underlined text but not graphics. Single-color graphics monitors display graphics in various shades but not underlined text. To compensate, most word processors let graphics monitors display underlined text in reverse video.

Buying Mail-Order PCs Overseas

Q. *As you can see from my return address, I live far from the States. Can I can buy a computer by mail?*

Yudy Yunardy
Jakarta, Indonesia

(continues)

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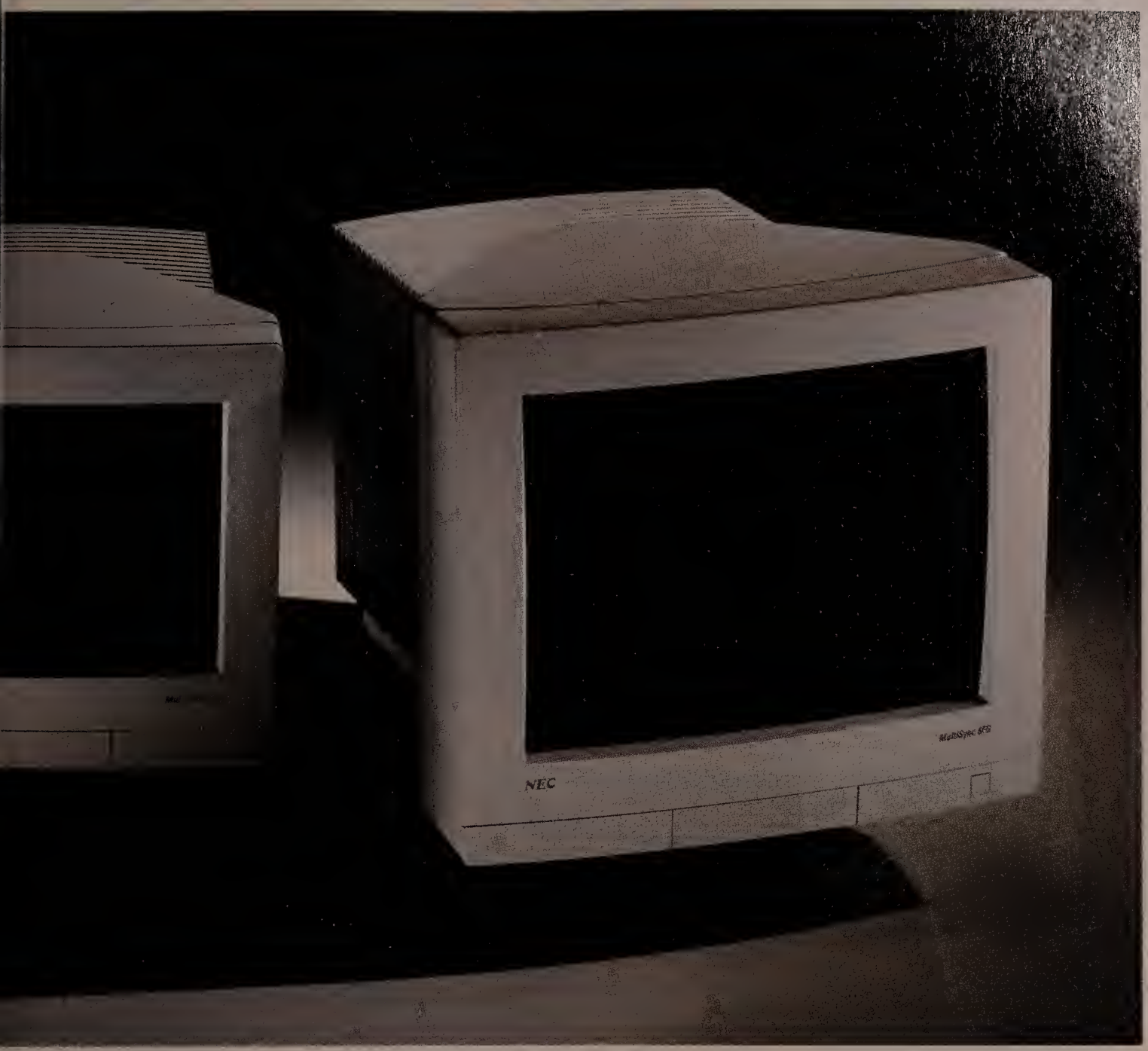
Advanced flat square screen technology takes the FG series performance into the future. Larger screens combined with our FullScan™ capability provide an edge-to-edge display with up to 36% greater active screen area** than most conventional

*Not available on the 3FGx. © 1991 NEC Technologies, Inc. MultiSync is a registered trademark and FG, AccuColor, FullScan and ErgoDesign are trademarks of NEC Technologies, Inc. Pantone is a registered trademark of Pantone, Inc. Apple is a registered trademark of Apple Computer, Inc.
**Dependent on graphics board and signal timing used.

C&C
Computers and Communications

Call 1-800-NEC-INFO. (In Canada: 1-800-343-4418.)
For immediate information, call NEC FAST FAX, 1-800-366-0476. Request #1521.

everything?



Not an introduction. A revolution.

monitors. Higher refresh rates enable stable, flicker-free images. While the high-contrast screens eliminate blurring, display colors more vibrantly and deliver exceptionally sharp text and crisp graphics.

ErgoDesign™ elements enhance comfort and safety. An antistatic screen coating eliminates dust attraction. And all the controls are in the front where they're easier to use. Plus, our Reduced Magnetic Field™ technology lowers ELF and VLF emissions. In fact, they even meet the strict Swedish MPR II guidelines.

MultiSync monitors support a range of video standards from VGA to 1280 x 1024 non-interlaced, Apple Mac II and many workstation modes.

The all new FG series from NEC. For an image as clear as the one in your mind.

Because ↑ is the way you want to go. NEC

Circle 182 on reader service card

POWER TIP NO. 222

A Macro That Beeps When It's Done

For lengthy *WordPerfect 5.1* macros, you can add an audio prompt at the end that lets you know when the macro's finished. To try this on an existing macro, press <Ctrl>-<F10>, type the macro's name, and press <Enter>E. Place the cursor at the end of the macro, and press <Ctrl>-<Page Up. Hit B (for {BELL}) and press <Enter>. Press <F7> to exit. The next time you execute the macro, it'll beep when it's done.

Suzanne Corber
New York,
New York

A. All five mail-order companies that won *PC World* Best Buy awards for their products in the past year will ship computers overseas. However, they won't ship to countries where they sell through a subsidiary or distributor, and you can't reach their toll-free numbers from outside the United States—instead, use the direct numbers listed below.

There are several differences between domestic and international mail order. You pay the shipping charges: to Jakarta, around $300 per system. You also pay any import tax: The Indonesian consulate in San Francisco says the rate might be 100 to 200 percent (check with your local customs office for the current rate). It could be worse—a few countries don't allow individuals to import computers at all. Also, if anything goes wrong with the system, you'll have to ship it back to the United States for repair at your own expense. Finally, systems containing state-of-the-art chips, such as the 50-MHz 486, may require a special export license from the U.S. government.

INTERNATIONAL MAIL-ORDER CONTACTS

CompuAdd Corp.
512/258-5575, 512/335-6236 (fax)
Direct numbers in Canada, the United Kingdom, France, Germany, and Mexico
Reader service no. 672

Dell Computer Corp.
512/338-4400, 512/343-3772 (fax)
Sells through subsidiaries or distributors in 30 countries, including Belgium, Canada, Finland, France, Germany, Italy, Luxembourg, the Netherlands, Sweden, Spain, and the United Kingdom.
Reader service no. 673

Gateway 2000
605/232-2000, 605/232-2023 (fax)
Reader service no. 674

Northgate Computer Systems, Inc.
612/943-8181, 612/943-8338 (fax)
Reader service no. 675

(continues)

How would you rather hunt for an image?

Scrapbook+™ for Microsoft® Windows™ lets you see the images you've stored, so you don't have to guess your way through long lists of cryptic filenames to find what you need. You can store hundreds of images with multiple formats in a single Scrapbook+ file... view them in seconds as thumbnails or full size... and then quickly place them into your documents. Don't waste another minute playing hide-and-seek with your images. Call 800/727-2793 for your local dealer.

EIKON

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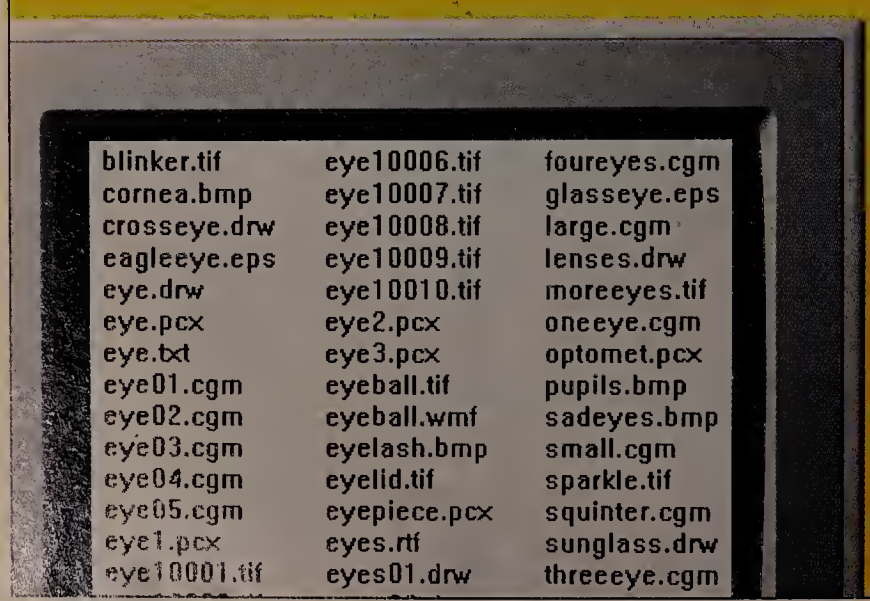
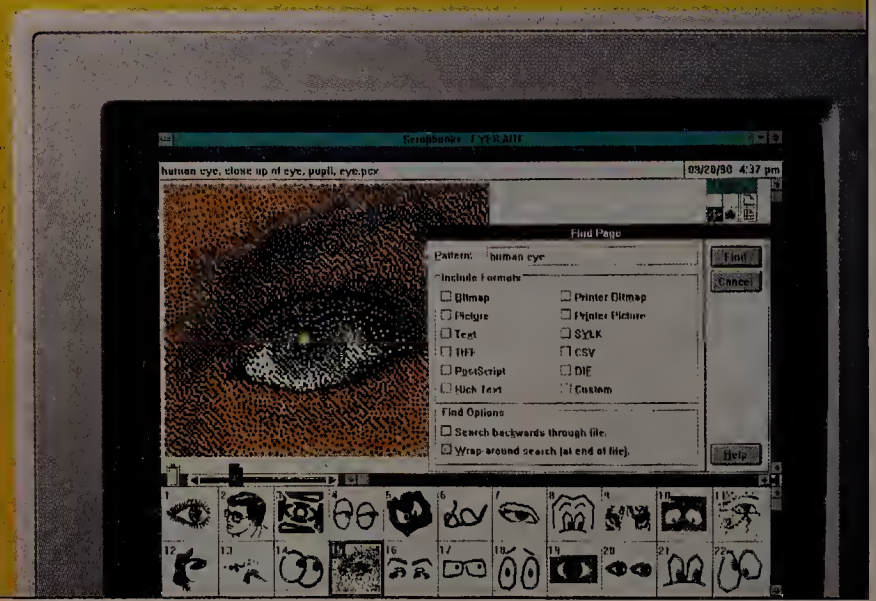
The old way.



The Scrapbook+ way.



Circle 82 on reader service card

Being No. 1 in PC Compatibles didn't just happen...

Hassle-Free Printer Sharing

for the HP LaserJet II, IID, III and IIID

PC MAGAZINE

"The ServerJet is the smoothest and most practical way I know to share a LaserJet." Frank J. Derfler, Editor PC Magazine, 1/15/91

Here's how you and your co-workers can have your own HP LaserJets without breaking the corporate budget.

It's called **SimpLAN** *ServerJet*.

Simply plug the *ServerJet* into the 'Optional I/O' slot of your HP LaserJet. Stretch phone cable, up to hundreds of feet, to each computer. Then, 12 people can simultaneously *whoooosshh* documents to the LaserJet at speeds as fast as 115,200 baud.

No more wandering down the hall with floppy in hand.

Or borrowing someone else's LaserJet.

Or wasting time waiting to print.

The *ServerJet* is available in a variety of models with up to 4MB of buffer memory. And because your office may have printers other than HP LaserJets, ASP Computer Products offers a complete line of printer sharing solutions.

To order your *ServerJet* or for more information call ASP at:

800-445-6190

ASP

ASP COMPUTER PRODUCTS, INC.

160 San Gabriel Drive
Sunnyvale, California 94086
Phone: 408-746-2965 • Fax: 408-746-2803

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Circle 43 on reader service card

Zeos Int'l Ltd.
612/633-6131, 612/633-9503 (fax)
Reader service no. 676

COBOL 6.0 Problems

Readers who ordered the shareware compiler *COBOL 6.0* as recommended in the March *Help Screen* but who have not received it should see the item "Bargain COBOL Redux" in this month's *Consumer Watch.*

Send your questions to Robert Lauriston, CompuServe 73707,1731; MCI Mail 381-7106; Internet duck@well-.sf.ca.us; or 415/442-1891 (fax); or mail them to The Help Screen, PC World, *501 Second St. #600, San Francisco, CA 94107.* PC World *will pay $50 for published questions. Sorry, we cannot acknowledge submitted materials.*

Karl Koessel is the technical editor and Robert Lauriston a contributing editor for PC World.

POWER TIP NO. 223

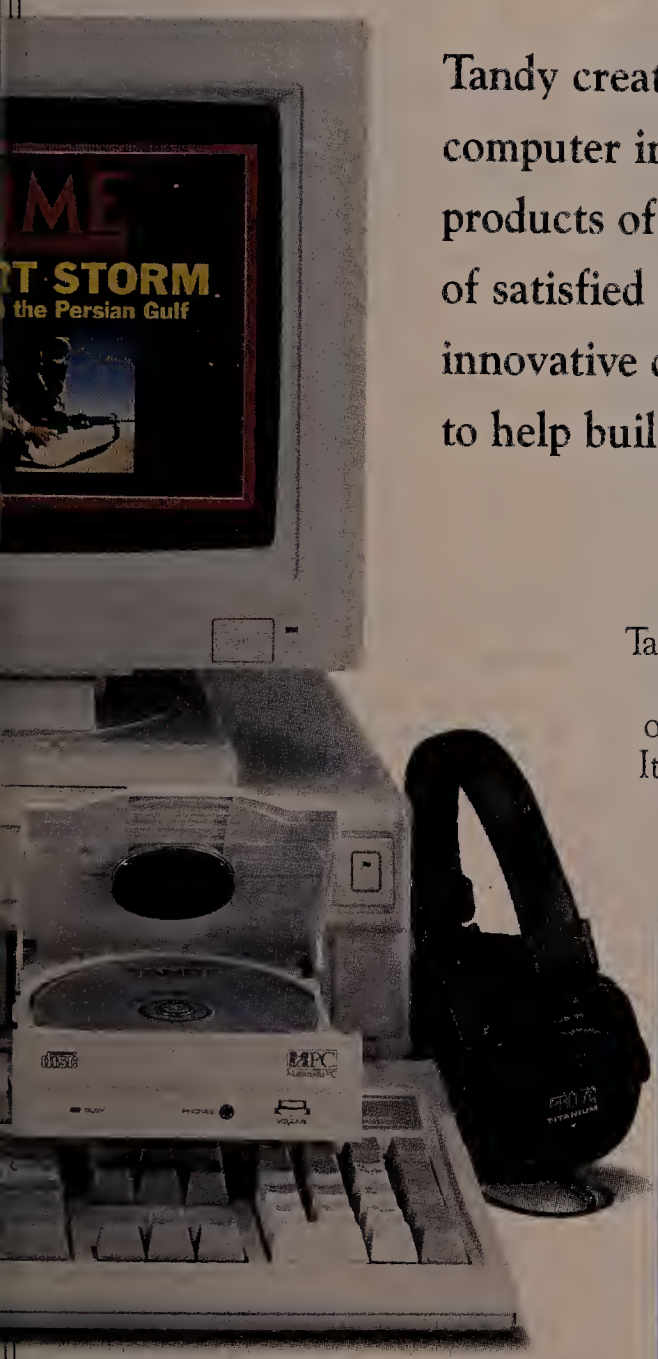
Printing to a Different Drummer

Does this sound familiar? You want to print your *WordPerfect 5.x* file on someone else's printer, but that person doesn't use *WordPerfect*. The best solution is simply to use your PC to print the file to a floppy disk, take it to the *WordPerfect*-less machine, and copy the print file to the printer using **copy a:** *printfilename port*. In most cases *port* is LPT1. The file should print with all formatting intact.

Lisa Hopkins
WordPerfect Technical Support
Orem, Utah

TANDY Engineered It

Tandy created the first mass-produced, nationally marketed personal computer in 1977, and has been a leader ever since. By manufacturing products of uncompromising quality, Tandy has built a large following of satisfied customers. And through innovative design, Tandy continues to help build the future:



The systems approach to home computing

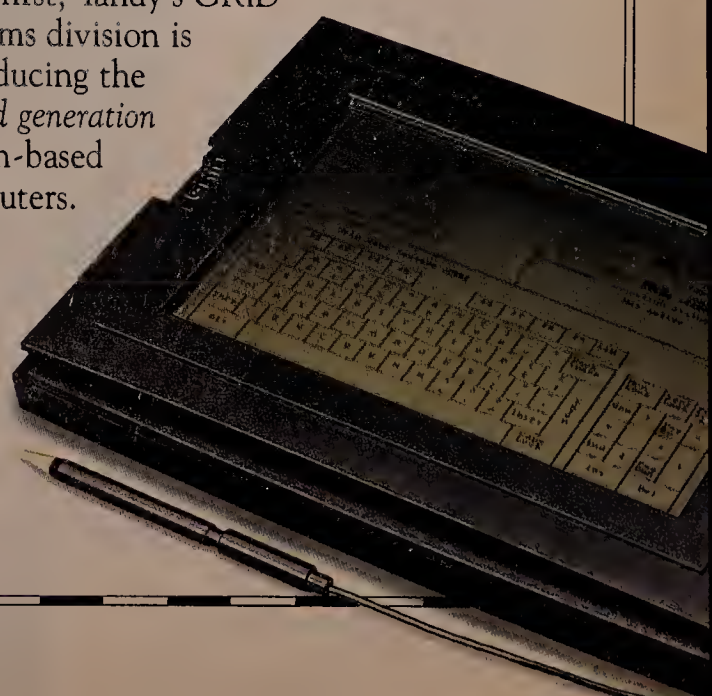
Tandy software engineers designed special applications software for our home computer; IBM didn't. It's so easy to use, your success in using any Tandy® 1000 RL is actually guaranteed.

Pioneering the notebook PC industry

Tandy's Model 100 helped define this market in 1983. Users depend on Tandy for innovative features and a rugged case that's built to last.

Writing the future

While others prepare to ship their first, Tandy's GRiD Systems division is introducing the *second generation* of pen-based computers.



Tandy jointly developed the Multimedia PC Standard

And now Tandy is first to present a complete line of computers with the added dimension of this exciting technology. Tandy engineers even designed an affordable upgrade that brings multimedia to existing PCs.

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AMERICA'S TECHNOLOGY STORE℠

A DIVISION OF TANDY CORPORATION

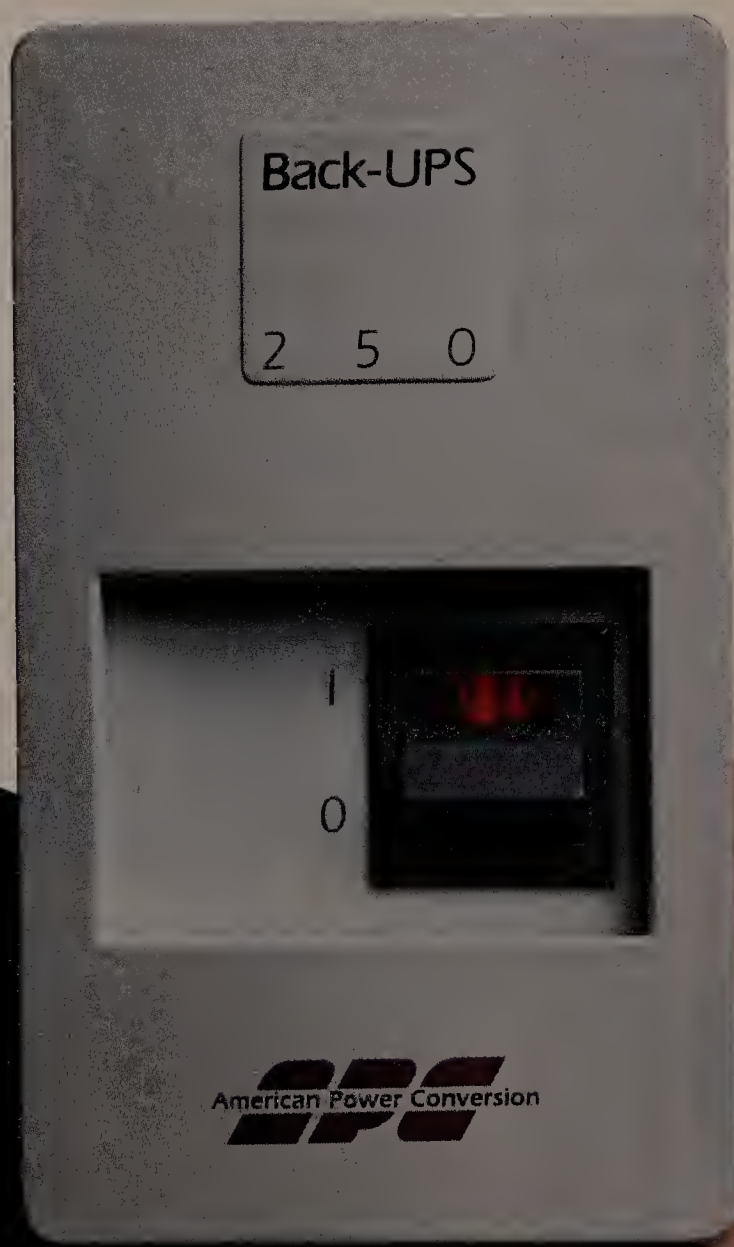
Circle 284 on reader service card

Get a hold of the best value in LAN power protection for just $169 suggested list price

Blackouts, brownouts, sags... Your data and hardware are vulnerable to problems that surge suppressors and power directors are just not equipped to handle.

Now there's a complete Uninterruptible Power Supply solution to suit any budget. The Back-UPS™ 250 is reliable protection for LAN nodes, 386SX machines, 286, small PS/2 systems, and internetworking hardware such as routers, bridges, gateways and hubs.

From the largest server to the smallest router, the Back-UPS Series will increase your productivity by providing a cost-effective solution to power problems. **Call for your free power protection handbook.**



The **NEW Back-UPS 250** offers even more cost-effective protection for LAN nodes (typical runtime for a 386SX system is 10 minutes).

- Full-time surge protection and line filtering
- Models from 250 to 1200 Volt-Amps, many with LAN interface for automatic-shutdown of Novell, LAN Manager, LAN Server, LANtastic, Banyan, SCO Unix, SunOS, AIX etc.
- UL, CSA and Novell approved with a 2 year warranty
- 230V models available
- Ask about PowerChute® UPS monitoring software and Novell-compatible UPS monitoring boards

LAN TIMES READERS CHOICE 1990

LAN TIMES READERS CHOICE 1991

	Model	Application	List
NEW!	Back-UPS 250	386SX, [illegible], XT, AT, internet hardware, POS	$169
NEW!	Back-UPS 400	Desktop [illegible], 486 systems, 286 servers	$249
NEW!	Back-UPS 450	Tower 38[illegible]6 systems, servers	$329
NEW!	Back-UPS 600	Heavily co[illegible]ed systems, CAD/CAM workstations	$449
	Back-UPS 800RT	Multiple sy[illegible]s, longer runtime applications	$899
	Back-UPS 1200VX	Multiple sy[illegible]s, LAN hubs, small minis, telecom equipment	$1199

The Back-UPS™

by American Power Conversion

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33-1-60078500 in Europe

Circle 45 on reader service card

NETWORK Q&A

How to Use CD ROMs With Novell's NetWare Networks

David Rhodes

Q. *We are considering a number of CD ROM–based applications for use in our company. What are the options for making these applications available to users on our NetWare network?*

Tristan Eckersberg
Lubbock, Texas

A. There are three different ways to share CD ROM drives on a network. Which is best for you depends on your company's specific needs.

The least expensive method is to install the CD ROM on a workstation (the "CD server") and access it via a remote-control utility such as *NETremote+* or *LANSight*. A memory-resident program (TSR) installed on the CD server sends the screen image to your workstation and routes your keyboard input back. Except for occasionally slowed response or jerky screen redraws, the CD ROM application feels like you're running it at your own workstation. The major limitation to this approach is that only one workstation at a time can control the CD server. Also, if you copy a piece of clip art from the CD ROM to drive C:, it goes to the CD server's hard disk, not yours. The workaround is to copy the file to a shared network directory, exit the remote control program, then copy the file to your local drive.

For multiuser access to CD ROM data, consider *CD Connection*. Again, a dedicated PC acts as the CD server, but the CD ROM browsing software runs on the workstations. When two or more users access the CD server, *CD Connection* juggles their requests for data, though response will be much slower. You may also encounter RAM cram—on top of the usual CD ROM drivers, each workstation must load a 30K redirector TSR and on non-NetWare LANs, NETBIOS.

For faster performance, you can use third-party software to install CD ROMs directly in a NetWare file server and take advantage of NetWare's superior disk caching. The best we've found is *SCSI Express*, which also eases RAM cram by eliminating the need for the CD ROM drivers and redirector TSR required by *CD Connection*. This approach saves at least 45K of workstation RAM. Servers running *SCSI Express* must be upgraded to NetWare 3.11, though other servers on the LAN can continue to run NetWare 2.*x*.

Finally, for top performance you can simply copy an entire CD ROM to a file server. One of our clients recently needed to set up several gigabytes of automotive technical data for constant reference by a 30-person department. When even the fastest CD ROM drives proved too slow, the company negotiated with the software vendor for a license to copy the disks to a large NetWare volume. Because NetWare server hard disks are six to ten times faster than the speediest CD ROM, this provided a major speed boost and solved the problem.

Be aware that many CD ROM software vendors are still grappling with the issue of multiuser licenses. As with other applications without network licensing schemes, network installation is generally permissible so long as you purchase a copy for each user.

David Rhodes is a consultant with Business Systems Group, a national systems integration firm based in Houston, Texas.

WHERE TO BUY

NETremote+ 4.11
Brightwork Development, Inc.
766 Shrewsbury Ave.
Tinton Falls, NJ 07724
800/552-9876, 908/530-0622 (fax)
LIST PRICE: $350 per server
Reader service no. 677

LANSight 2.0
Intel Corp.
300 Park Ave. S, 15th fl.
New York, NY 10010
800/458-5267, 212/995-8604 (fax)
LIST PRICE: $395 per server
Reader service no. 678

CD Connection
CBIS, Inc.
5875 Peachtree Industrial Blvd. #170
Norcross, GA 30092
404/446-1332, 404/446-9164 (fax)
LIST PRICE: $695 for 8 users
Reader service no. 679

SCSI Express for NetWare 386
Micro Design Int'l
6985 University Blvd.
Winter Park, FL 32792
407/677-8333, 407/677-8365 (fax)
LIST PRICE: $1985 with SCSI adapter
Reader service no. 680

POWER TIP NO. 224

An Undelete for 1-2-3 Version 2.01

You're making changes in a 1-2-3 version 2.01 worksheet and accidentally overwrite some important data—but you want to keep the other alterations you've made since your last save. Although 2.01 lacks an undelete function, there's an easy work-around: Select *File Combine Copy Named/specified-range*, enter the address of the cells you've overwritten, and select the name of the file you're working on. 1-2-3 will retrieve the original information from the previous version of the file and insert it into your current worksheet.

Rex Farrance
Assistant Editor

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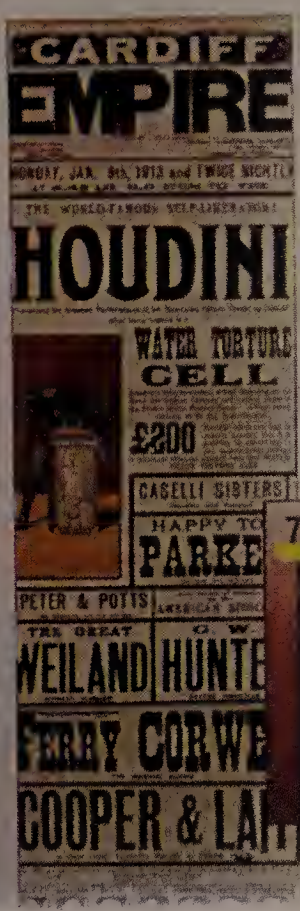

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What's more, *OmniPage Professional* now exclusively features HP AccuPage,™ the new technology that dramatically enhances the text-recognition performance of the HP ScanJet IIc scanner.

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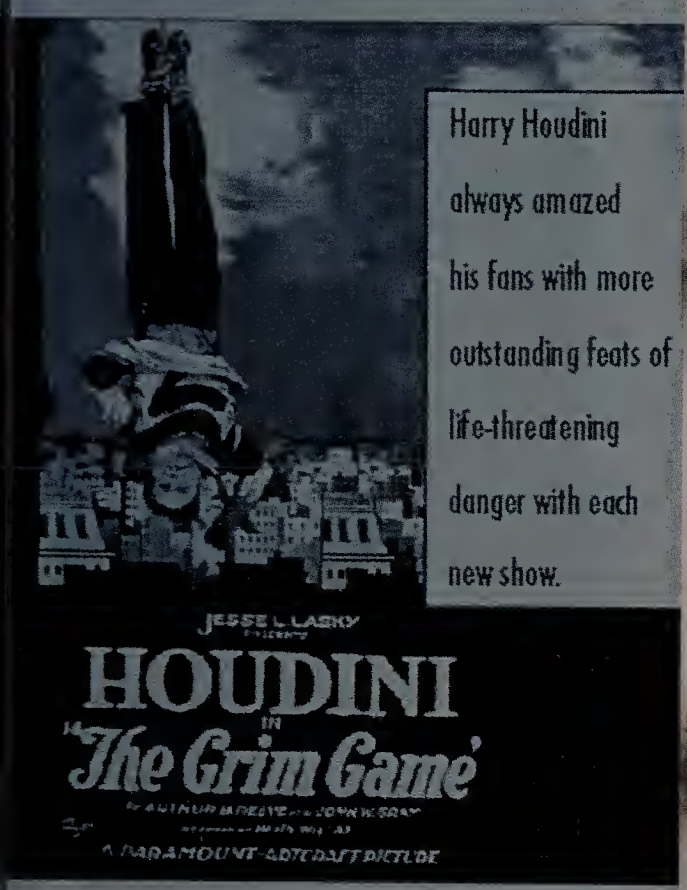

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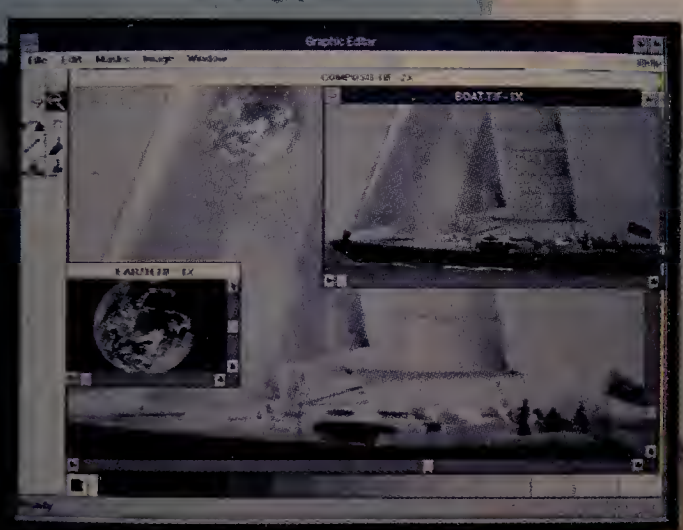
No other OCR software product offers as much functionality as *OmniPage Professional*. Deferred Processing lets you choose selected portions of several pages, and then recognize the entire batch at once. So you can scan and recognize articles from business journals, scientific reports, or lengthy financial documents at record-breaking speeds.



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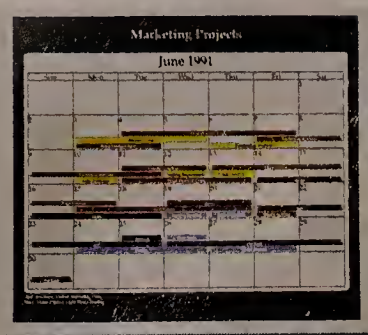
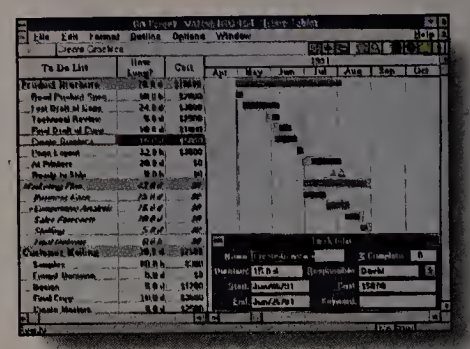
NIGHT OF THE LIVING DEADLINES.



Project Calendar™ *presents your schedules in a familiar calendar format—and that's just one of the many On Target reports.*



On Target is designed specifically for Windows™ 3.0. Its graphical user interface, familiar spreadsheet format, and full color WYSIWYG graphics make project planning easy.

On Target creates a number of different reports. You can also copy graphics into other Windows applications.

With On Target, everyone is clear about their responsibilities—so your team can work together more effectively.

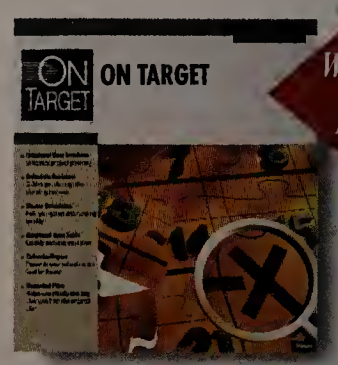
It's 2:30 a.m. Do you know where your projects stand? Now you can avoid those horrifying all-nighters with On Target™—the Windows 3.0 project planner from Symantec.

On Target is the easiest way to keep tabs on virtually all your projects at once. It's the most appropriate way, short of formal "project management," to manage all your schedules and deadlines.

On Target instantly converts your projects into a variety of detailed schedules, charts and graphs. Just enter your schedules into the familiar spreadsheet interface, and choose your own colors, fonts, and display format. On Target does all the rest.

On Target's *Schedule Assistant*™ guides you logically through the planning process. It even comes with *Starter Schedules*™ to help you start planning right away. So if your work load has become a nightmare, rest easy. It's all in a day's work with On Target.

Call **1-800-228-4122, Ext. 303W** for a free demo disk* and competitive upgrade information.



Windows 3.0 Product

Circle 272 on reader service card

*Demo disk available in US and Canada only. Outside the US, call (408) 253-9600. © 1991 Symantec Corporation. On Target, Project Calendar and Schedule Assistant are trademarks of Symantec Corp. All other products or brand names listed are trademarks or registered trademarks of their respective holders.

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CONSUMER WATCH

Advice and information for the computer consumer

Christine Whyte

Can Wrist Supports Prevent Carpal Tunnel Syndrome?

Carpal tunnel syndrome (CTS)—three words that strike fear into the heart of anyone who spends a good part of the day typing on a keyboard or using a mouse, especially if a job depends on it. Chances are you know someone who suffers from this painful and potentially disabling wrist injury. Reported cases of repetitive strain injury, the category to which CTS belongs, have increased dramatically in the last decade, and many cases probably go unreported by people who are afraid they'll be labeled as a complainer or lose their jobs.

The good news is that you can take steps to help prevent CTS and other painful conditions that result from swelling and inflammation of the tendons or their linings in the hands, wrists, and arms. It's important to be aware of the causes, symptoms, and safeguards.

You're particularly at risk if you type nonstop for long hours or if you constantly bend your wrists or lean on them to reach the keyboard or hold the mouse. (The goal is always to keep your wrist in a "neutral," or straight, position.) Some experts say you're worse off the faster you type.

In the early stages of CTS, you may wake up with a tingling sensation or numbness in your hand, as if it's asleep, or experience the same symptoms when turning the pages of a newspaper or brushing your teeth. Other early warning signs (they can occur while you're typing or not): pain or soreness in your wrist or forearm; discomfort in the thumb web or where your thumb joins your hand; or a decrease in grip strength (a coffee cup may fall out of your hand). In the later stages of CTS, you may feel severe wrist pain or be unable to use your wrists. The rule is: If pain or numbness persists, even intermittently, see a doctor. The earlier you receive treatment, the better your chances of a fast, full recovery.

According to the experts, the best safeguards against CTS are overall good health and regular breaks from work. You need to stay fit (strong stomach and back muscles improve your posture, reducing the muscle fatigue that can cause you to lean on your wrists). You should maintain a healthy weight. And you should avoid smoking, which constricts the blood flow. At work, make a practice of getting up and stretching at least once an hour (a 10-minute break is recommended): Flex your wrists and fingers, shake or massage your hands

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ROSEMARY WILTON

Wrist support products come in a variety of designs. Shown here are the WR-2 extended wrist rest from Lifestar Advanced Environmental Systems (lower left, under keyboard), the Kinecto Puzzle Pad with interlocking keyboard and mouse wrist pads from Silicon Sports (middle), and two products from MicroComputer Accessories: the Wrist Trolley (upper right), which clamps onto your desk, and the Wrist Reminder, worn by the green glove (lower right).

ANTHONY RUSSO

and arms, roll your head, and generally loosen up. The idea is to get your blood flowing, especially to your hands, and give your tendons and muscles a chance to rest.

Controversy persists over the effectiveness of wrist supports in preventing typing-related wrist injuries. Approximately 30 vendors sell such products, which vary in design and range in price from $12 to $50. Dr. Linda Morse, medical director of the Repetitive Motion Institute in San Jose, California, sees hundreds of patients to whom she prescribes wrist rests, and reports that most people like them. Similarly, Dr. Charles Resnick, a hand surgeon based in Los Angeles, also recommends wrist rests if they keep the wrist straight and are comfortable to use. According to Dr. Morse, a good wrist support should be 3 inches deep; as wide as the keyboard; thick enough (typically 1½ inches) that your wrist is never bent up or down; have no sharp edges; be made of firm foam (never hard plastic or metal) covered in material that allows you to move your hands smoothly across the keyboard; and be anchored so it doesn't move when your hand does. Dr. Morse also suggests that you collapse the legs of your keyboard to make it flat. Like keyboard wrist supports, a mouse wrist rest should also keep your wrist in a neutral position.

On the other side of the controversy, Dr. Robert E. Markison, a hand surgeon in San Francisco, doesn't think wrist rests necessarily help. The dangers are that if you lean on a wrist rest, you may immobilize your wrists for long periods of time and put extra pressure on them, possibly causing injury. "Wrist rests are the quick fix of 1991," says Markison. "In the near future, voice recognition technology and keyboards such as the split-and-tilt Tony keyboard will be the answer." The Tony is a patented keyboard currently in preproduction at the Tony Corporation in San Francisco. Its unique design allows your hands to be in an anatomically neutral position while you type. For information, call the company at 415/969-8669.

Terri Hansford, a physical therapist in San Francisco who specializes in hand injuries, also recommends that the buyer beware until the completion of long-term studies, currently in progress, that test the amount of force applied to the wrist when you use a wrist rest. In Hansford's opinion, arm rests, which have been available in this country for only about a year, are better than wrist rests. An arm rest is a trough in which you rest your forearm; it's suspended from an articulated arm (similar to that on some desk lamps) that clamps onto your desk, and lets you move your arm freely in every direction as well as adjust the arm rest to your height. Prices for arm rests range from about $280 to $600 per pair.

Before you buy a wrist rest, arm rest, or keyboard that the manufacturer says

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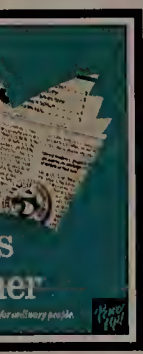

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DOS VERSION

Circle 211 on reader service card

is "ergonomically designed," find out exactly what the company means by that claim. Duffy Elleby, president of Minneapolis-based Ergosource, which sells ergonomic industrial and office products, points out that specific ergonomic standards for product manufacturers don't exist. Without an industry seal of approval or the results of long-term studies to guide you, you take a leap of faith when you purchase any of these products. Laura Stock, associate director of the Labor and Occupational Health Program at UC Berkeley, feels that comfort is the bottom line: If wrist supports are designed properly and people like using them, they should be available from employers on request.

Selected Wrist Support Vendors

The following list is a random sample of manufacturers who sell wrist support products. Inclusion in this list does not represent an endorsement by *PC World* or anyone mentioned in this article.

WHERE TO BUY

Accu-Back, Inc.
1475 E. Del Amo Blvd.
Carson, CA 90746
800/272-8888, 213/639-1080 (fax)
Reader service no. 712

The Ability Center of Greater Toledo
5605 Monroe St.
Sylvania, OH 43560
419/885-5733, 419/882-4813 (fax)
Reader service no. 713

AliMed, Inc.
297 High St.
Dedham, MA 02026
800/225-2610, 617/329-8392 (fax)
Reader service no. 714

Computer Coverup, Inc.
2230 S. Calumet
Chicago, IL 60616
800/282-2541
Reader service no. 715

Curtis Manufacturing Company, Inc.
30 Fitzgerald Dr.
Jaffrey, NH 03452
800/548-4900 (outside NH),

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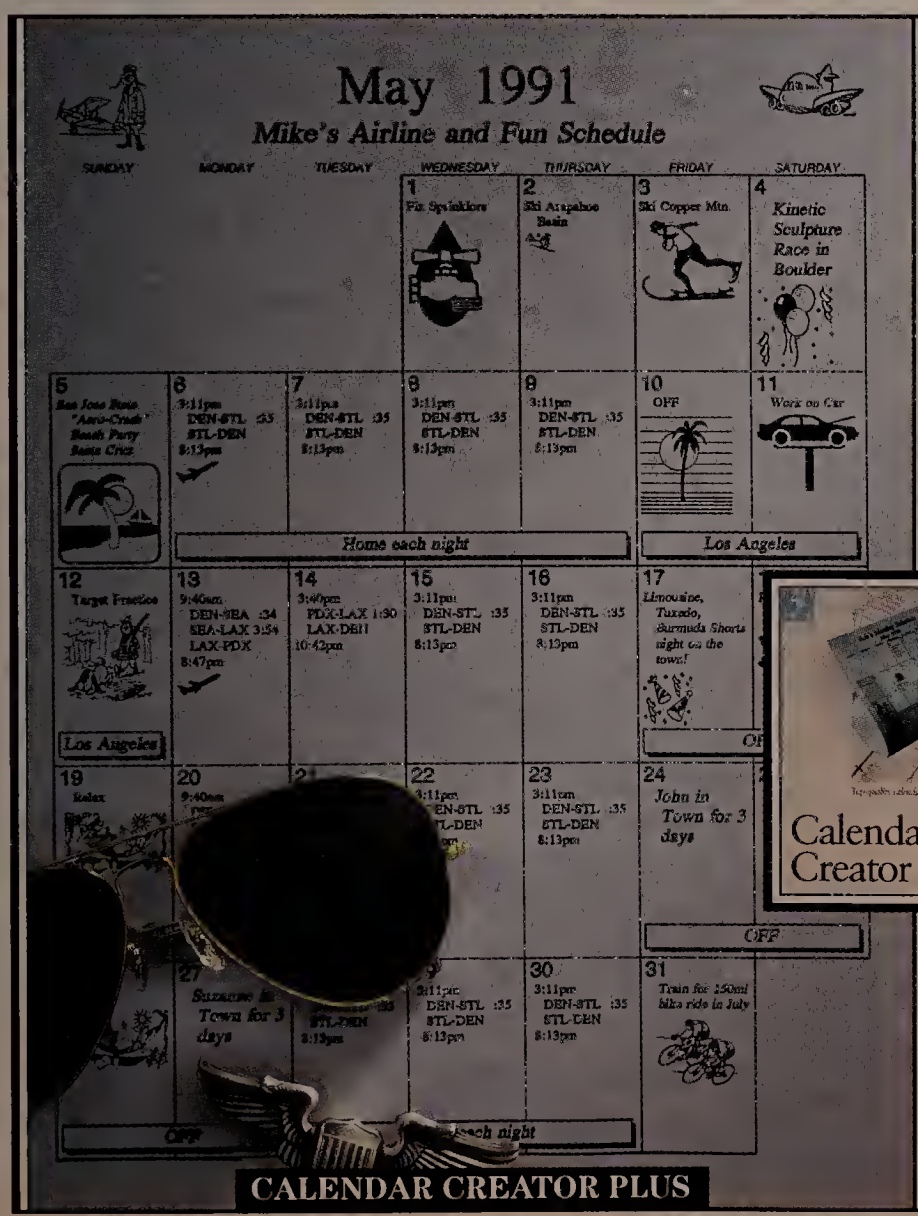

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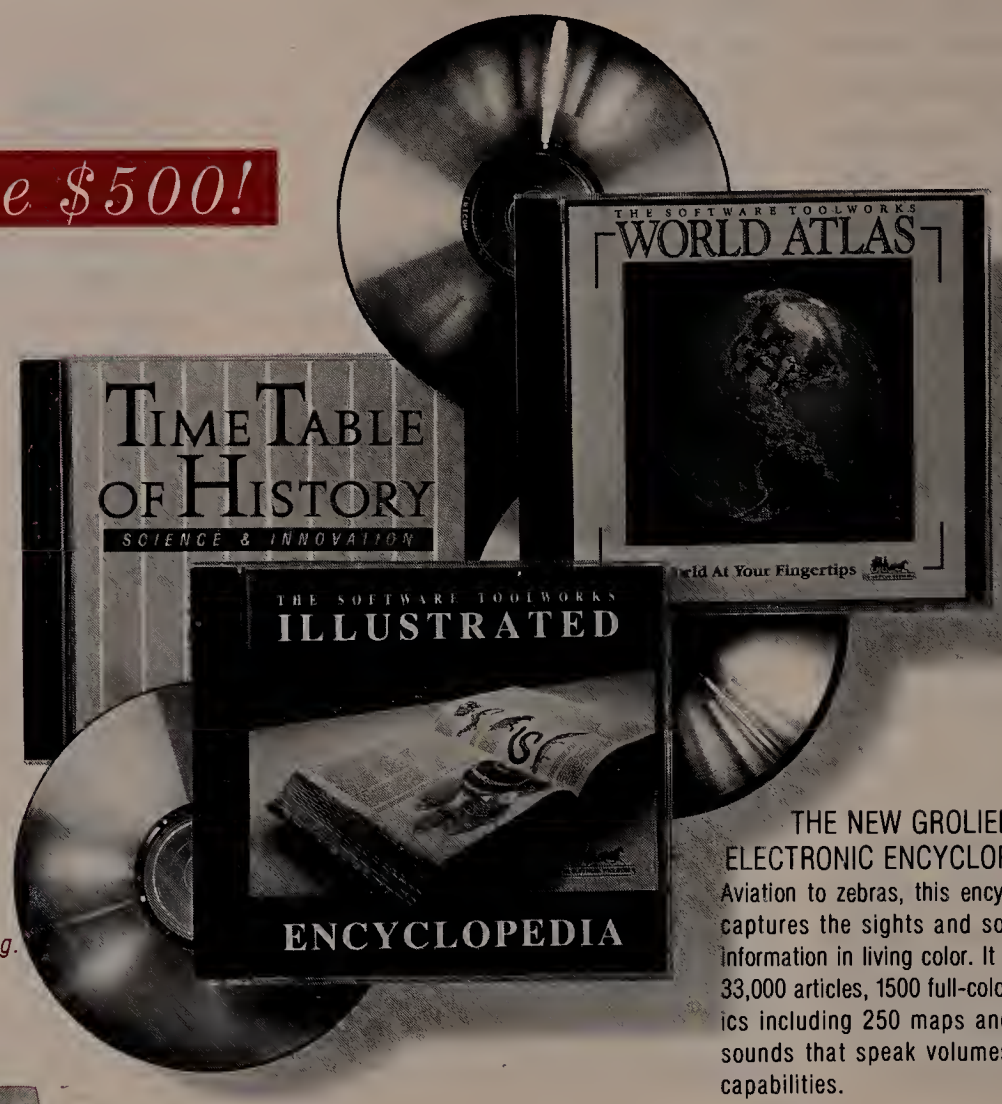

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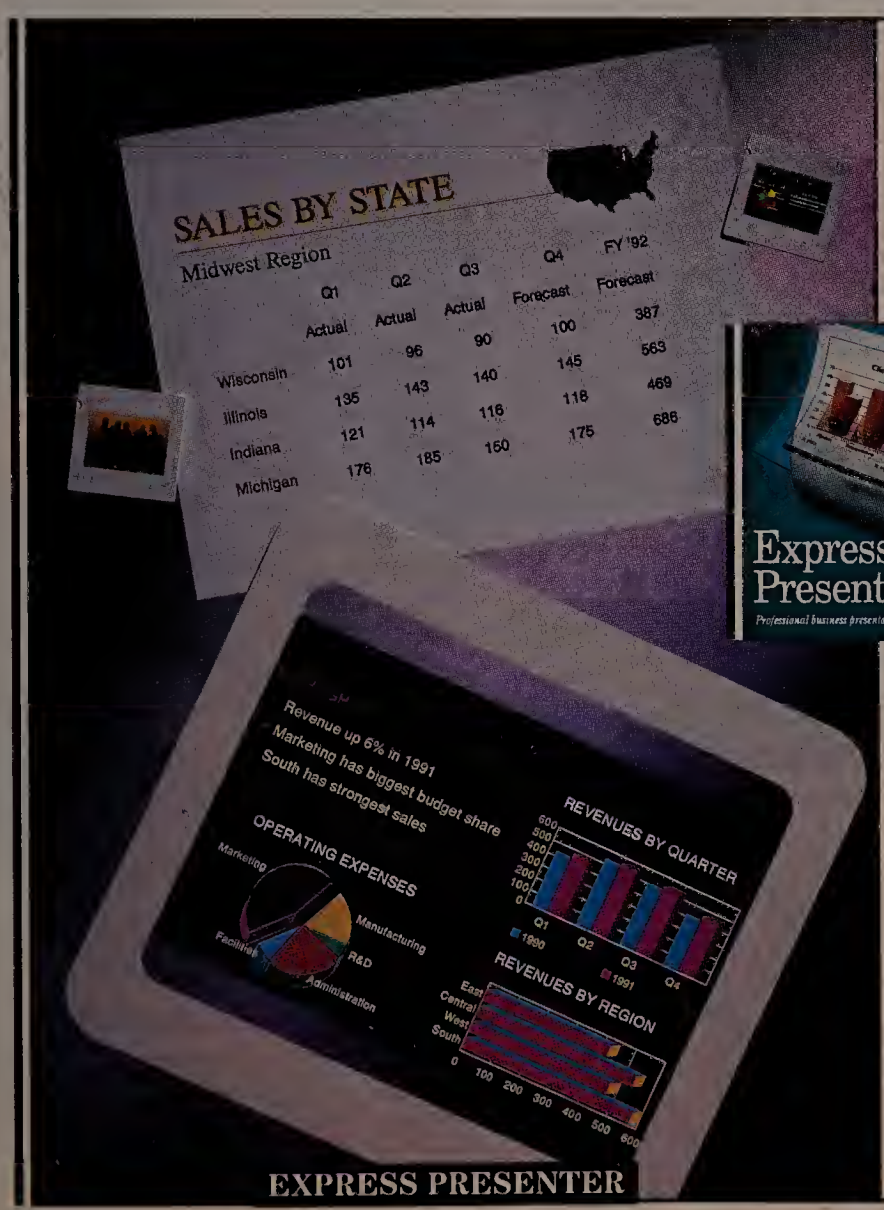

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If you suffer from repetitive strain injuries and need information or a sympathetic ear, ask your physical therapist or doctor to recommend a local support group, or call the following people:

Samantha Greenberg, Computer Injury Network: 213/207-1653

Caroline Rose, publisher of a newsletter about repetitive strain injuries: 415/424-9100

SHOP TALK

Caveat Emptor

Since the beginning of this year, *Consumer Watch* has received five letters from dissatisfied purchasers of Seagate hard disks. In one case, Seagate satisfied the customer with a working replacement for a defective hard disk. The company contacted a second customer but didn't provide the requested solution. And according to a Seagate spokesperson, the company does not wish to respond to the other three customers, or to *Consumer Watch* on their behalf. Should you decide to purchase a Seagate drive, be aware of the problems encountered by these people:

R. Scholten of Zeeland, Michigan, had a Seagate ST4114R 120MB RLL drive that quit working nine months after purchase. As a replacement, Seagate gave him a refurbished unit of the same model, which failed within five months. Seagate offered him another refurbished unit as a replacement, but Mr. Scholten declined because he didn't want to risk more downtime. Instead, he purchased a Seagate ST1289A IDE drive and asked Seagate to credit the price of the RLL drive toward his new purchase. Seagate didn't respond to his letter or to *Consumer Watch.*

Kenneth Au of Foster City, California, purchased a Seagate 20MB drive that had to be repaired twice within three months of purchase and then broke down two years after the purchase date. Again, Seagate failed to respond to his letter or to *Consumer Watch.*

David Marcus of El Centro, California, had his first Seagate ST251 hard drive fail within three months. Seagate sent him a second ST251 drive that didn't work when he received it, and a third replacement unit that stopped working 18 months later. Two more replacement units didn't work upon receipt, and a third failed within six months. After numerous phone calls and a letter to Seagate, Mr. Marcus received a new working drive in July of this year.

Dave Ritter of Lewisberry, Pennsylvania, tried to install four defective Seagate hard drives; a fifth drive worked. He requested that Seagate reimburse him for the money he spent hiring an outside repair person to help him with

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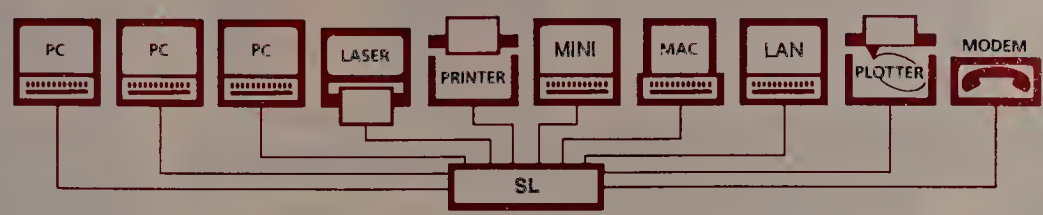

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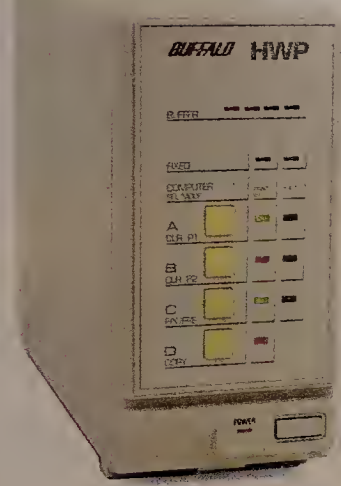

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HXM	4 2 Ser., 2 Par.	Any Combination	256KB - 16MB	Pop-up or Buttons	$295 / 256KB $395 / 1MB
HXS	4 Serial	Any Combination	256KB - 16MB	Pop-up or Buttons	$295 / 256KB $395 / 1MB
HWP	5 Parallel	3/2 4/1	256KB - 16MB	Pop-up or Buttons	$295 / 256KB $395 / 1MB
HXP	4 Parallel	2/2 3/1	256KB - 16MB	Pop-up or Buttons	$245 / 256KB $345 / 1MB
HCP	2 Parallel	1/1	256KB - 16MB	One Printer	$225 / 256KB $325 / 1MB
AS-41	5 Parallel	4/1	None	One Printer	$195
AS-31	4 Parallel	3/1	None	One Printer	$175

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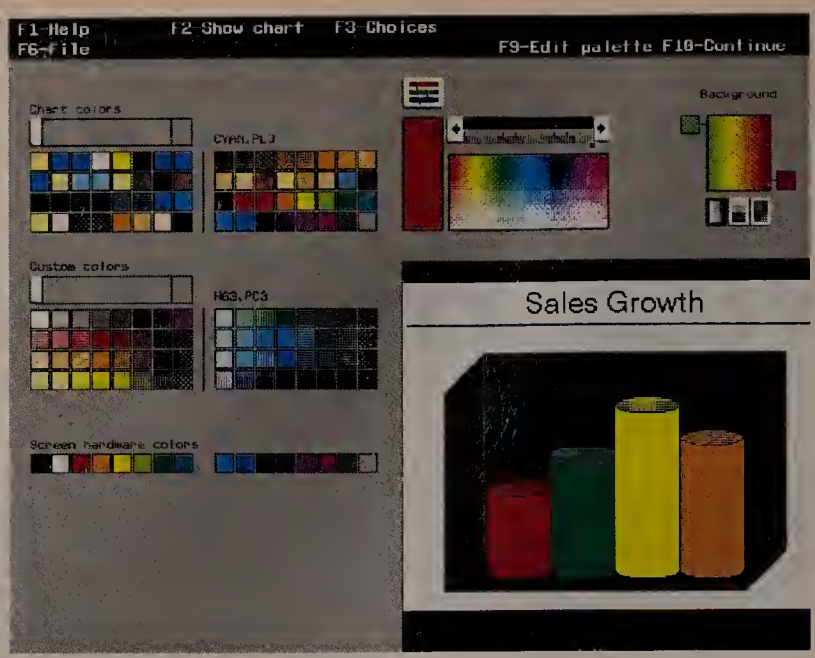
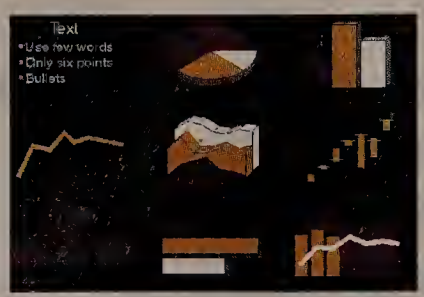
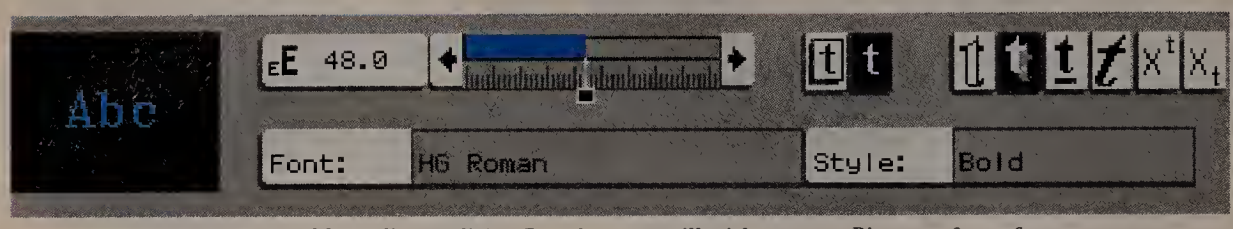


Choose from 32 color palettes. Then shade. And mix. And blend.

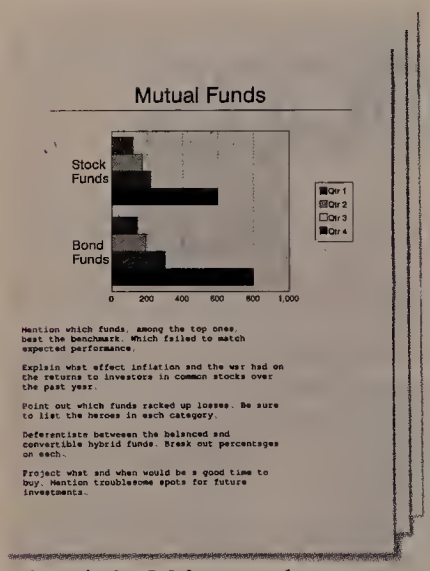


160 charts ready-to-go.

Fill it with bitmaps.

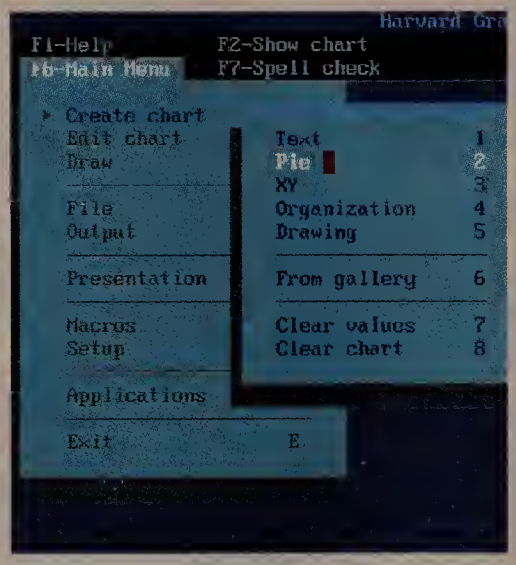


Underline. Bold. Outline. Italicize. Do what you will with our new Bitstream® typefaces.

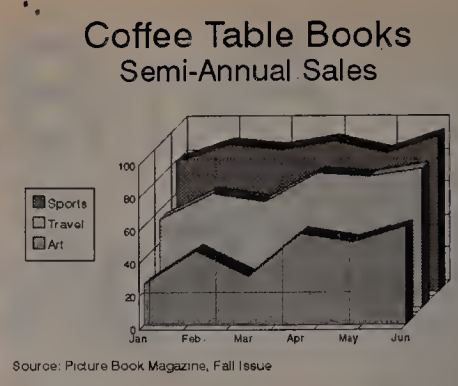


A reminder: We have speaker notes.

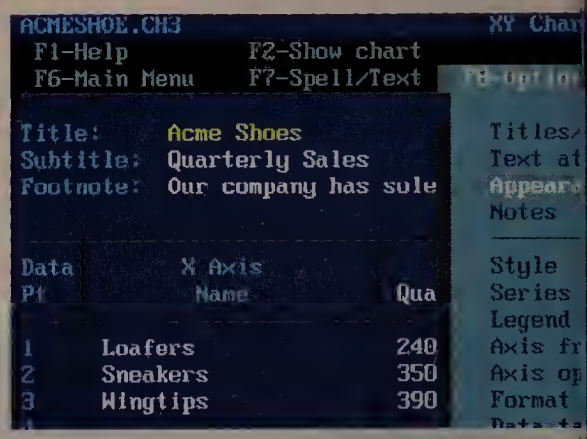
Twist it. Turn it.



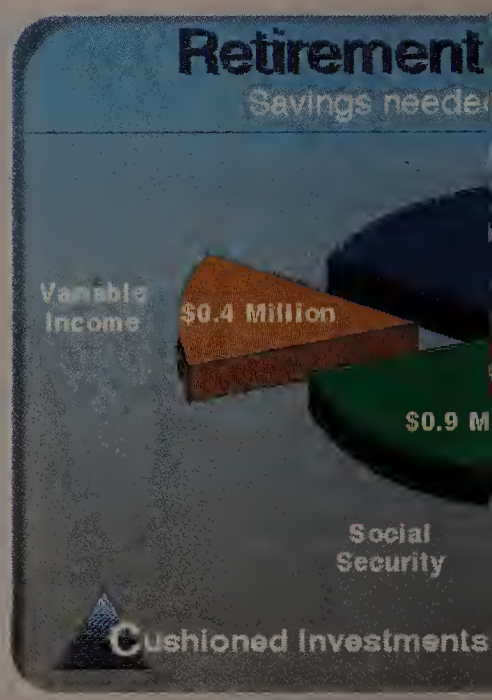
Look familiar? It should. It's Harvard Graphics.



What you see is what you get.



Pull-down menus: A new feature to get at the



You enter the data, we'll make it look good. It's

Overwhelming evidence is more than just

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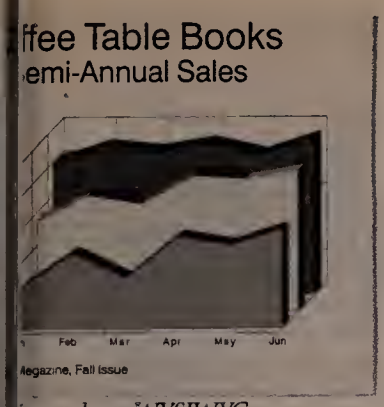
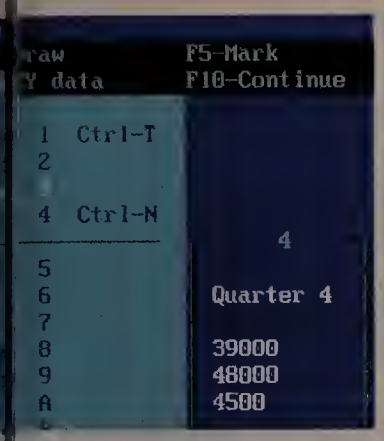
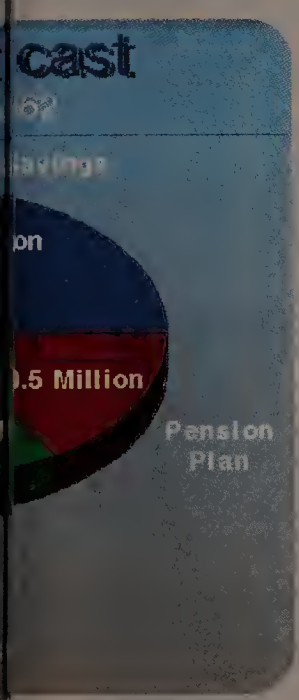
For $125, Harvard Graphics users can order 3.0 by calling 1-800-548-4772. Harvard Graphics 3.0 is a registered trademark of Software Publishing Corporation. Bitstream is a registered trademark of Bitstream, Inc.



es, we have WYSIWYG.

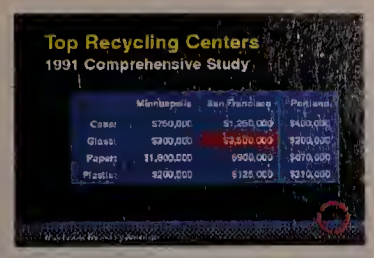


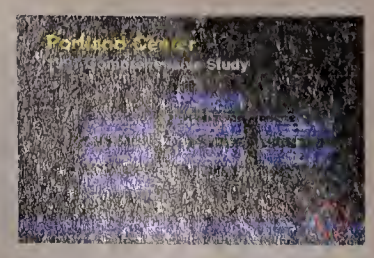
eatures. Easier than ever.



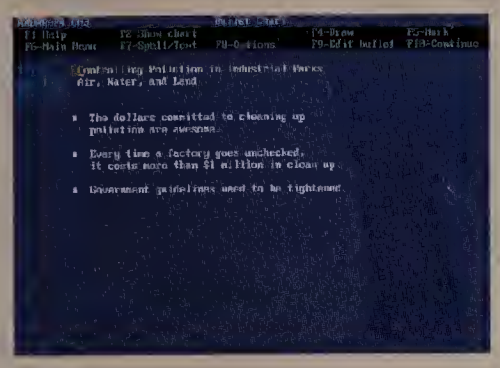
what you've known us for all along.

Drawing tools. 39 in all.

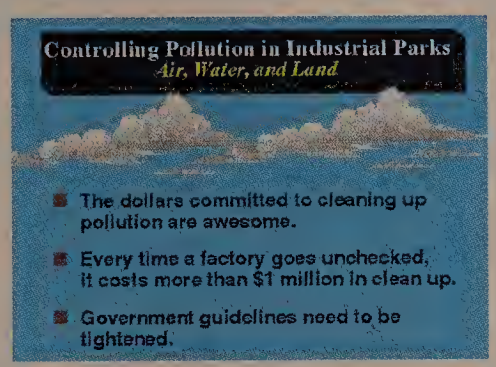




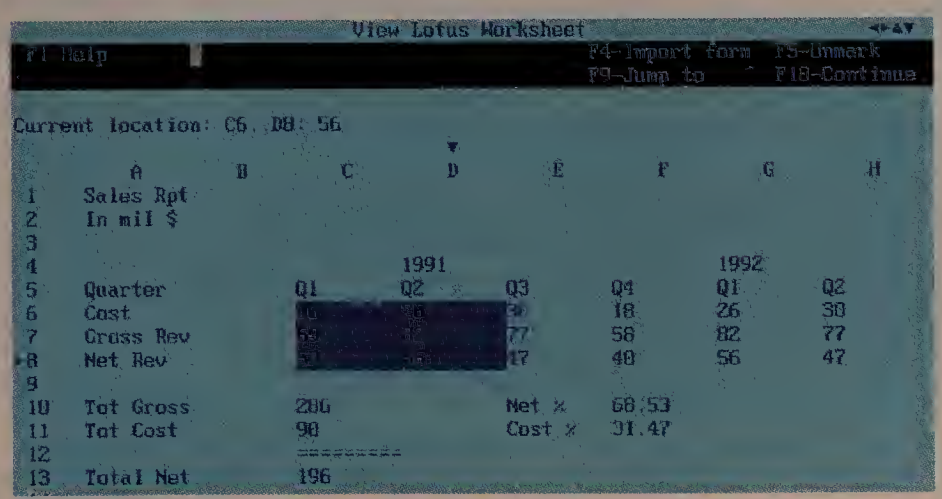
From titles to footnotes. From colors to logos. Our global options keep it consistent.



Do what you've always done before...



...style it like you've never seen before.



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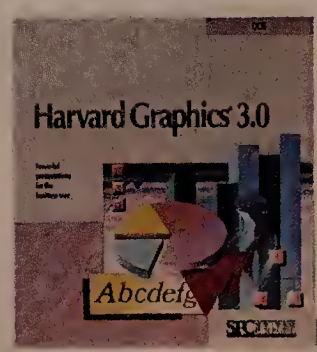

own demo disk. And view the evidence yourself.

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the four defective drives. A Seagate spokesperson told *Consumer Watch* that the company contacted Mr. Ritter but said, "We have a policy of not providing monetary compensation in cases like this."

Abraham Thomas of Singapore reported that the Seagate ST4096 hard disk he purchased had an advertised specification of 80.2 formatted megabytes. When formatted by a Seagate supplier, the hard disk's available disk space was 79.9MB. Although he contacted Seagate technical support both by phone and in writing, Thomas received no adequate explanation for the discrepancy in formatted capacity. *Consumer Watch* also requested a response from Seagate but didn't receive one.

Bargain COBOL Redux

In our March 1991 *Help Screen* column, we told readers that *COBOL 6.0,* a shareware compiler, could be ordered directly by sending $25 to the author, Robert Noweck. Three readers contacted us after they sent checks to Mr. Noweck but didn't receive the software. After *Consumer Watch* called Mr. Noweck, he fulfilled these three orders but explained that he was discontinuing development of the compiler and would no longer be able to take orders. Instead, AV-Sync Online Services of Atlanta will distribute the final version. The source code is also available to qualified developers by request to the AV-Sync system manager but, at the request of the author, may not be redistributed.

To obtain *COBOL 6.0* from AV-Sync Online Services, you can pay the subscription rate of $25 for three months or $40 per year. Besides the *COBOL* compiler, you will receive access to utilities, communications, programming, data base, spreadsheet, business/finance/time-management, education, and graphics software.

You can contact AV-Sync through the PC Pursuit and AccuLink services, or you can dial it directly at 404/320-6202. A 24-hour answering service is available at 404/325-0665. All 25 nodes support 9600-baud HST. Connections with v.32 and v.42 modems are also available on other lines. Settings for connection should be **N-8-1**.

Apologies Accepted

Editor's note: We received two letters about SoftLogic Solutions, which manufactures the Software Carousel *context switcher utility. The lesson is that a company can make mistakes, but if they're graciously remedied, customers will be happy. Following are excerpts from the letters:*

In late 1990 when I received the *Software Carousel* version 4.0 upgrade, the reference manual wasn't included and I couldn't install the program. I called SoftLogic Solutions, and a customer representative told me a manual would cost $10.00. When I objected, the repre-

(continues)

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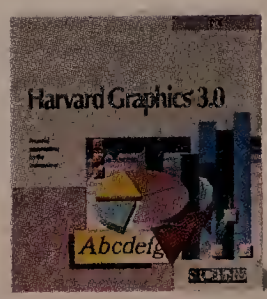
More eye-popping visuals from Harvard Graphics.

As you can see, Harvard Graphics® 3.0, the hot new DOS upgrade from Software Publishing Corporation, is a winner in everybody's book. Take, for instance, *Software Digest*® and the National Software Testing Lab.®* In their highly regarded tests, Harvard Graphics 3.0 blew away not only all other DOS presentation programs, but the Windows™ programs as well. Call and we'll send you a summary of their report. It's a real eye-opener.



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Call 1-800-336-8360, Operator 769, for a copy of the report and a demo disk.

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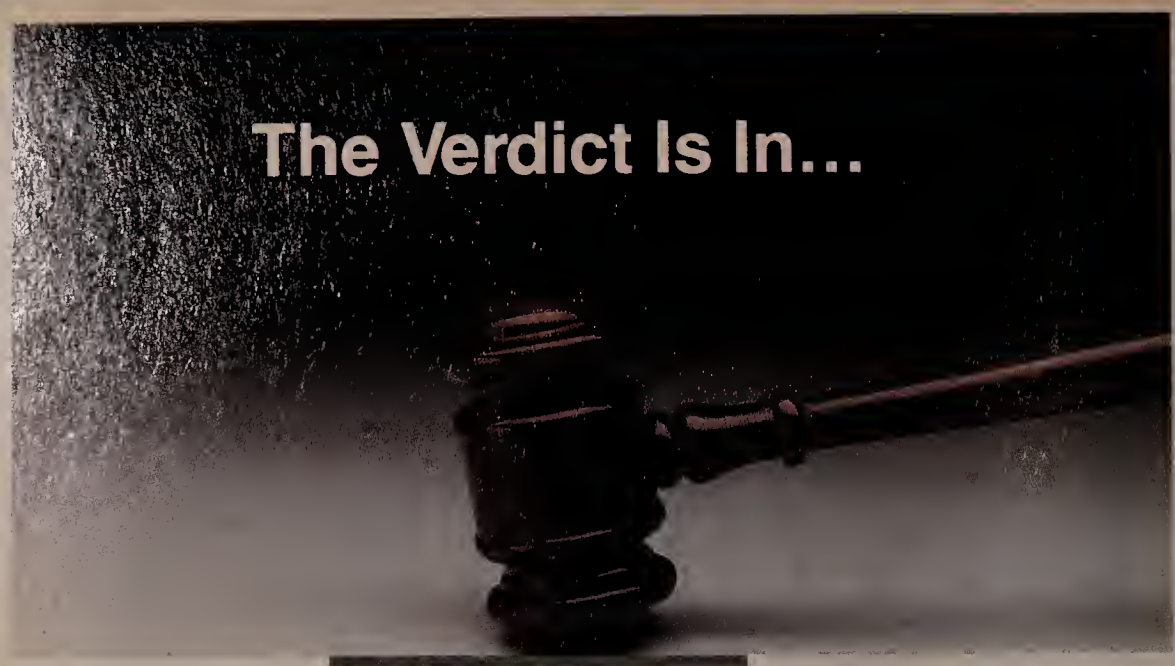

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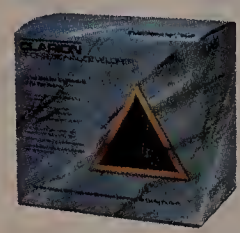

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sentative said the company would investigate the matter and get back to me. Six months later I hadn't heard from the company and wrote a detailed follow-up letter. Shortly thereafter the company's vice president of product support called to say the company would send me the latest version (5.0) at no cost. Since the company could have merely sent me the 4.0 manual, I appreciate their extra effort.

Rodney Drake
Yonkers, New York

I purchased *Software Carousel* in February 1991 and discovered in June that a newer version had been available since the beginning of the year; I had never received notice from the company about this upgrade. At first I wasn't concerned because I was satisfied with my version of the software, but when I upgraded to MS DOS 5.0, my version of *Software Carousel* wouldn't work. I learned that the upgrade I needed would have cost only $5 within 60 days of purchase, but since I received no notice, I was stuck with a version that was incompatible with my new operating system. When I called SoftLogic Solutions about my problem, they agreed to send me an upgrade for $5 even though the 60-day upgrade period had expired. I was also impressed that I wasn't put on hold or transferred to 20 people when I called the company; my long distance call took 5 minutes—a small price to pay for great service.

Brian P. Cooper
Dayton, Ohio

Think you've gotten a raw deal—or a great one? Send the details to Consumer Watch, PC World, *501 Second St. #600, San Francisco, CA 94107; MCI Mail PC World Editorial; CompuServe 74055,412; or 415/442-1891 (fax). We'll investigate complaints and publish letters with the broadest interest.*

Christine Whyte is a freelance writer living in San Francisco.

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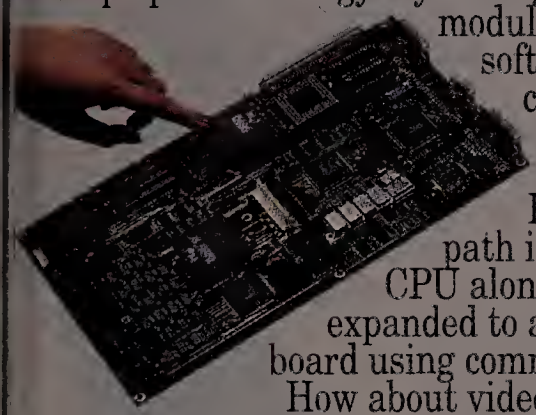

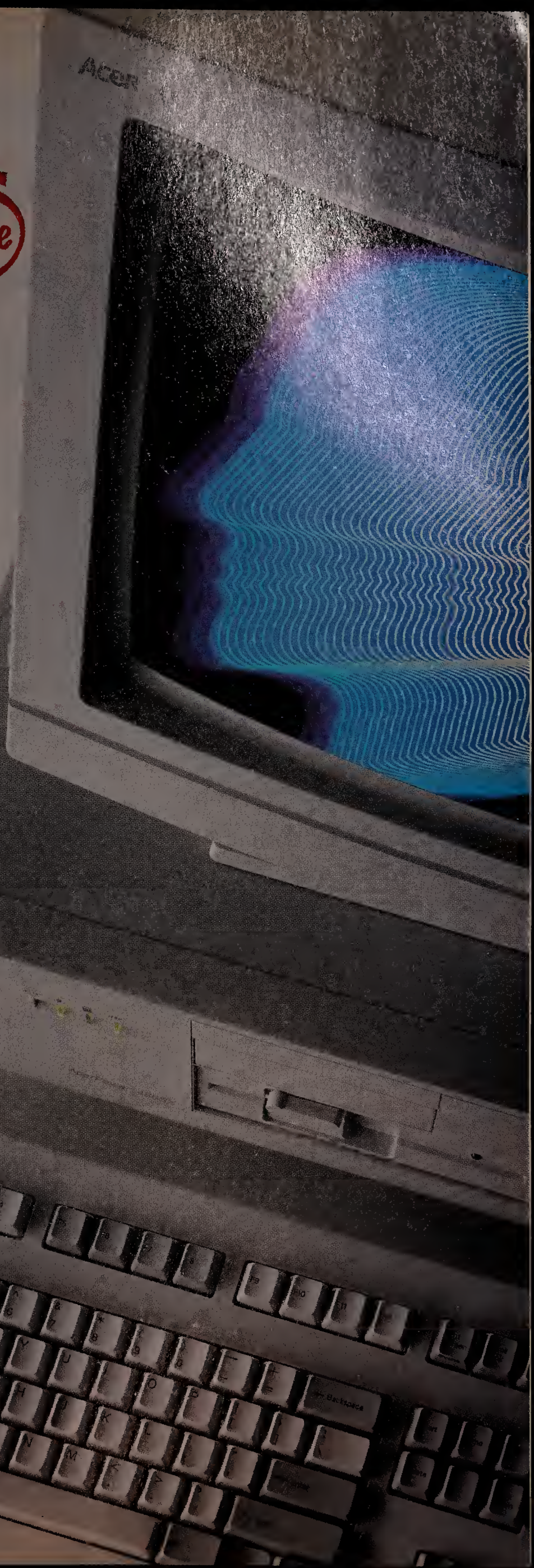

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V.32 at 9.6, 4.8 Kbps	●	●	●
V.22bis/V.22/BELL 212A at 2.4, 1.2 Kbps	●	●	●
V.21/BELL 103 at 300 bps	▲	▲	▲
V.33 at 14.4, 12.0 Kbps	●		
V.29 at 9.6, 7.2, 4.8 Kbps	●		
V.27ter at 4.8, 2.4 Kbps	●		
G3 FAX	●	●	●
EIA Class 2 FAX Standard	▲	▲	▲
Dynamic Online Fall back/forward	●	●	●
Other Features			
V.42bis/V.42; MNP5/MNP4	●	●	●
Max. Throughput Possible(K); DTE	76.8	57.6	57.6
2-Wire Dial Up and Leased Line	●	●	●
4-Wire Leased and Dial Backup	●		
Line condition monitoring	●		
Read/Write/Reset Remote Configuration	●	●	●
Complete Diagnostic Capability	●	●	●
Synchronous Transmission Capability	●	●	
Password Protection and Call Back	●	●	●
Also Included			
Warranty, Parts and Labor (years)	5	5	5
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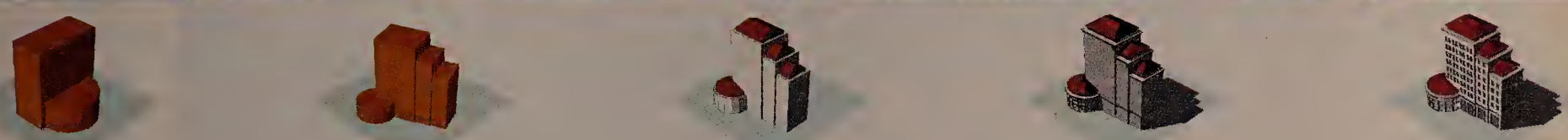

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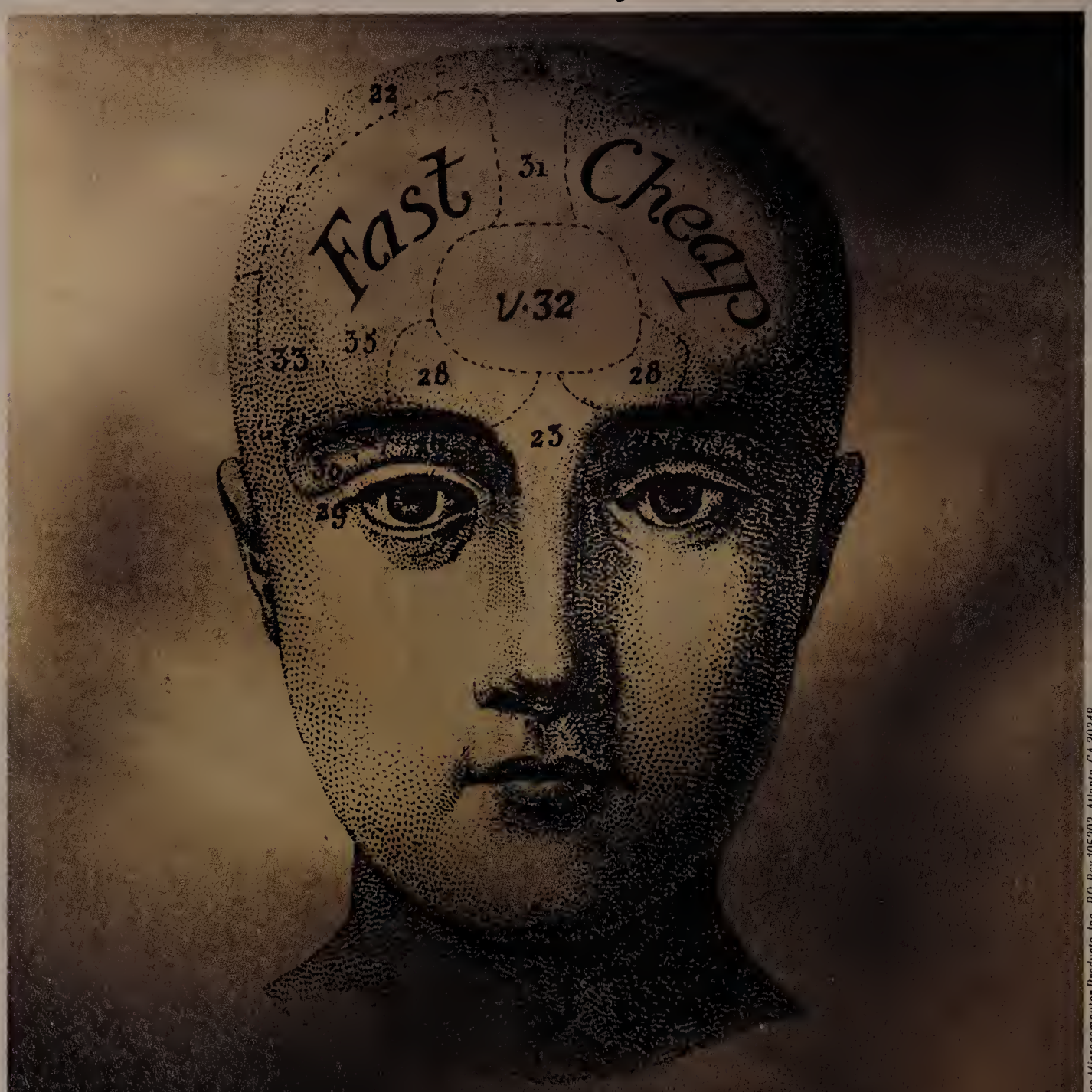

Fig.32

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MANAGER'S FILE #7

Leaving MIS Standards Behind

Alice LaPlante

Standards are the mainstay of most MIS departments, but if the PC users in your department are confined to particular programs, they may feel limited—not to mention irritated—when more attractive alternatives beckon.

All too often software standards can be out-of-date, inadequate, or just plain unfit for the employees in your particular department. Because standards are generally set by systems staff rather than by end users, the standards may be technically competent yet entirely inappropriate for employees' business needs. And when state-of-the-art technology such as multimedia, graphics, or desktop publishing is involved, with exciting new packages appearing on the market almost every month, a corporatewide software standard can become obsolete even before the ink is dry on the official memo.

Fortunately, in most organizations today, the end users are no longer forced to employ only a single company-blessed package in any particular category of software. As a manager, the advantage of going your own way is clear: You get to choose the software that is most suitable for your employees' day-to-day work.

In these days of increasingly decentralized PC buying decisions, many MIS departments now provide an "out" for individual managers: They are allowed to stray from the software standards list, but often with the understanding that they're on their own if they run into difficulties using an unapproved product.

The hazards of such independence can be substantial: no training, no support, no calls to the MIS help desk. Another major problem in this era of increasing connectivity results from possible incompatibilities with file formats if your department's users need to exchange files with users from other areas of the company. By establishing your independence, you also forfeit the benefit of MIS methodically testing software for such incompatibilities as well as for bugs and crashes.

Moreover, if a companywide standard has been set, the MIS department often has a solid relationship with the vendor, which ensures rapid upgrades, quick bug fixes, and special access to technical personnel. Your lone end-user department won't necessarily have that kind of buying clout. Because of these hazards, the best action for a manager who is unhappy with a company software standard is to negotiate for some form of MIS cooperation.

Many MIS departments are aware that forcing people to use packages they dislike causes more problems than it solves. They may be unaware, however, that a certain product no longer meets employee needs. In such cases, input from managers is not only heeded, it's welcomed.

As a manager, you'll also need to cooperate by understanding that software anarchy can cause needless expense and aggravation for what is generally an overworked MIS staff. Cooperation—not contention—can get users the software they need, without causing support nightmares for the systems department.

Alice LaPlante is a freelance writer in Palo Alto, California.

Minimizing the Risks of Breaking With MIS Standards

If your department chooses to stray from the MIS path, these tips will help you avoid pitfalls.

- ✓ Assign at least one departmental "super user" per package to act as resident expert. This person's job is to test the software for bugs and file incompatibilities and to help co-workers handle technical difficulties.
- ✓ Arrange for informal support and training from an MIS staff member.
- ✓ Make sure your employees keep vendor telephone support numbers handy. Investigate the possibility of getting special corporate support privileges from the vendor.
- ✓ Look into outside training/support organizations that provide hot line help on a contract basis.
- ✓ Form a departmental user group that meets regularly to promote grass roots support among employees.
- ✓ Organize an MIS user committee to get input on future MIS standards decisions and to coordinate upgrade paths and data compatibility with other departments.
- ✓ Check computer publications for the latest information on product upgrades, bug fixes, and upcoming software releases.
- ✓ Maintain a central library of independent software reference books.

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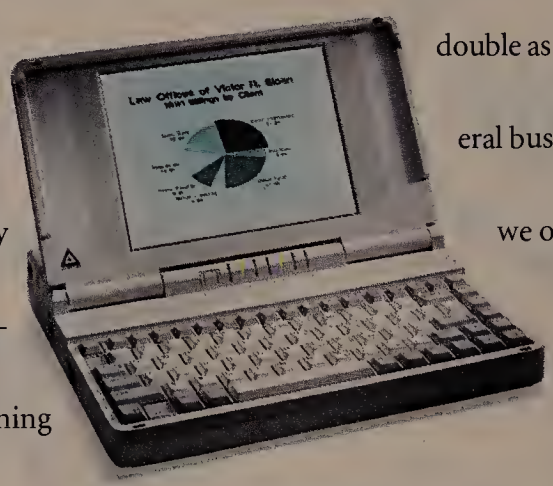

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Circle 124 on reader service card

Edited by ERIC BENDER

Users Remain Wary of First Release of Products

As Software Advances, Bugs Still Remain

Complex Products, Diverse Environments Confound Tests

Like most users, Harvard's Randy Grenier wants to make sure software is thoroughly debugged before trusting data to it.

BILL O'CONNELL

So you bought the latest copy of Central Point's *PC Tools*, brought it home, loaded it on top of your new DOS 5.0, and the screen turned blank. Or the mouse pointer went berserk. Maybe you lost data.

This is a major vendor's flagship package. What happened?

Central Point employed an incompatible compression scheme and missed a few products it should have tested, responds Tim Pettibone, vice president of product development. "That's the biggest challenge—to make sure you have all major hardware and software in house," he comments.

Central Point has since beefed up both its in-house stock of equipment and its beta testing program. But similar problems continue to afflict users and vendors across the software market. As PC applications grow steadily more complex—fueled by advanced features, more sophisticated operating systems, and an increasing array of products to run on—are they getting any less buggy?

Beta but Still Buggy

Vendors typically prioritize bugs by severity and by likelihood of occurrence. A data-loss bug is high priority, as is a function that doesn't work as advertised. Crashing is considered plenty serious (unless it occurs once in a blue moon or in an oddball configuration).

The many in-house testing and quality assurance processes are followed by beta tests, which vendors say simply provide a sanity check on features and interface, expand configuration testing, and help prioritize bugs.

But users feel betas can do more. Mike Finefrock, chair of the IBM PC Users Group of the Charleston Computer Club in South Carolina, divides developers into "those that let users debug products and those that spend considerable money sending out betas."

Pushing the Art, and the Cost

To release increasingly complex products in stable form the first time out, Microsoft has become more efficient in the lab, says *Word for Windows* product manager Monica Harrington. That means automated test processes, and risk analysis on bugs.

Other vendors agree the state of the art is rising. "A lot of aspects of software development cause fear and trepidation, but software development is really getting better," says Rod Turner, Symantec executive vice president. Powerful techniques such as object-oriented programming and modular design help developers focus more on building quality in rather than testing bugs out.

Users say, however, that a vendor's commitment and resources remain just as important. "Software is better debugged today from most major players, but it is debatable if small companies do enough testing," says Timothy Carmichael, program chairman for the Dallas-based North Texas PC Users Group. Size helps, agrees Randy Grenier, systems coordinator at Harvard University's Office of Budgets: "I know that Microsoft will continue to work on a product." Grenier remains wary of buying the first release of any package. He's anxious to get the *Windows* version of Borland's *Paradox*—"[but] I have huge data tables I can't afford to screw up."

Vendors hear these concerns loud and clear—one reason Central Point is mailing a free maintenance release to all registered users of *PC Tools 7.0*. —*Kathleen A. Gow*

The Challenge in Stamping Out Bugs

Key problems in writing bugfree software:

"With more and more kinds of equipment [on the market], making sure we are covering all bases for compatibility."

—Tim Pettibone, vice president of product development, Central Point

"Not to spend as much money testing a product as you did developing it."

—Eileen Rudden, general manager for DOS spreadsheets, Lotus

"Infusing predictable quality and delivery times."

—Hamid Mirza, vice president for data base development, Borland

Vendors aim for bugfree software but must settle for something less, due to the complexity of today's PC environment and constraints on development costs and schedules.

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Paul Somerson
PC Computing
July 1991
MS-DOS 5 Review

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Users Turn—Slowly—to Windows Word Processors

Holdup: Slow Windows Adoption

SETH RESNICK

Millipore's shift to Word for Windows will be paced by "an incredible investment in 286s and XTs," says Linda Ead.

The *Windows* word processor race is heating up: *WordPerfect for Windows* is finally about to take its place alongside major upgrades of *Microsoft Word for Windows* and Lotus's *Ami Pro* (see "Windows Gives WordPerfect a Shiny New Look"), while Symantec's *JustWrite* and Software Publishing's *Professional Write* duke it out in the executive word processor arena. Splashy ad campaigns are de rigueur, and dirt-cheap promotional copies await users willing to trade one product for another.

Will customers bite on a *Windows* line? Many have—among them Millipore Corporation, a Bedford, Massachusetts, laboratory equipment manufacturer that adopted *Word for Windows* as part of a shift to the environment.

"At first, keyboard-intensive secretaries didn't want to use *WinWord*," reports systems manager Linda Ead. "But those forced into the program like it, especially the WYSIWYG." It's much easier to integrate images with text for attractive reports than it is with DOS word processors, she explains.

Users Adopt Windows First

Mary Conti Loffredo, analyst at International Data Corporation in Framingham, Massachusetts, foresees a respectable but undramatic shift to *Windows* word processors. Their sales should triple this year to 1.5 million out of a total of 5.75 million word processing packages. That's about the pace of *Windows* adoption in general, says Conti Loffredo.

Users—especially those in large corporations—typically pick their environment before their word processor, she notes. Most switch to *Windows* word processors because they want *Windows'* multitasking, ease of use, and links between applications—not because they need specific *Ami Pro* or *Word for Windows* features.

And right now only about 10 percent of the user population has *Windows*. What's more,

corporate users' projections for *Windows* are dropping. Robertson, Stephens & Co., a San Francisco market analysis firm, reports that corporations expect only 11 percent of their machines to be running *Windows* by year-end—down from the 28 percent they projected a year ago.

Hardware Still a Barrier

Many corporations committing to *Windows* say the transition will be slowed by the cost of upgrading the installed base of PCs. "We have an incredible investment in 286s and XTs," says Millipore's Ead, who estimates that only about 20 percent of the company's PCs are powerful 386 or 486 machines.

"Most of the new machines that companies are buying are very capable of running *Windows*," points out Monica Harrington, Microsoft's product manager for *Word for Windows*. But Robertson, Stephens's study also shows PC purchases running about 19 percent lower than in 1990, which means fewer purchases of high-powered new models.

Compatibility with older applications continues to be a significant hurdle. Steve Fogarty, a systems manager for the House of Representatives in Washington, D.C., says it will probably be "a long time" before many offices on the Hill are writing their letters in *Windows*. "The letter you get from your congressman was written in *WordPerfect* and tracked in our own data base that was written with *Advanced Revelation*, which works intimately with *WordPerfect*," explains Fogarty. At least for now, he says, moving the data base toward *Windows* would involve too much trouble.

But other firms are plunging ahead. "We're definitely moving into *Windows*, and we're currently evaluating which word processor to select," says Lisa Veldeam, a systems manager for Siemens Automotive in Auburn Hills, Michigan. The move should be fairly easy from a hardware perspective, says Veldeam, since about 70 percent of the division's computers are 386s.

The advantages? "We do a lot of presentations," says Veldeam, "so we need to keep multiple programs open, to cut and paste, and to move into electronic mail." Another benefit, she emphasizes, is that "*Windows* provides a consistent environment, which makes training easier."

—*Patrick Marshall*

Extras like Ami Pro 2.0's charts impress customers but don't necessarily justify purchases of Windows-ready PCs.

"There's a first time for everything, even in the PC industry: Microsoft Corp.'s MS-DOS 5 actually lives up to its advanced billing."

David P. Chernicoff
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June 10, 1991

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"With a Windows-like file manager, on-line help, more memory for applications, and the ability to load multiple applications, MS-DOS 5 is unquestionably the best DOS ever."

Scott Spanbauer
PC World
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PCs Sift News Avalanche

Users Get Timely Tailored News

More than the dollar, the deutsche mark, or the yen, timely information is the international currency of the 1990s. But with tens of thousands of news stories breaking every day, how do you find just the nugget you need when you need it? Three firms combine on-line news services with desktop computing power to offer three very different solutions.

NewsEdge from Desktop Data in Waltham, Massachusetts, takes leads from more than 30 wire services; users sign up for as many services as they want. The audience, says chief executive Don McLagen, is the growing number of financial, corporate, and marketing executives who need the news *right now:* "If they read it in tomorrow's *Wall Street Journal,* or if it appears on tonight's news, it's too late."

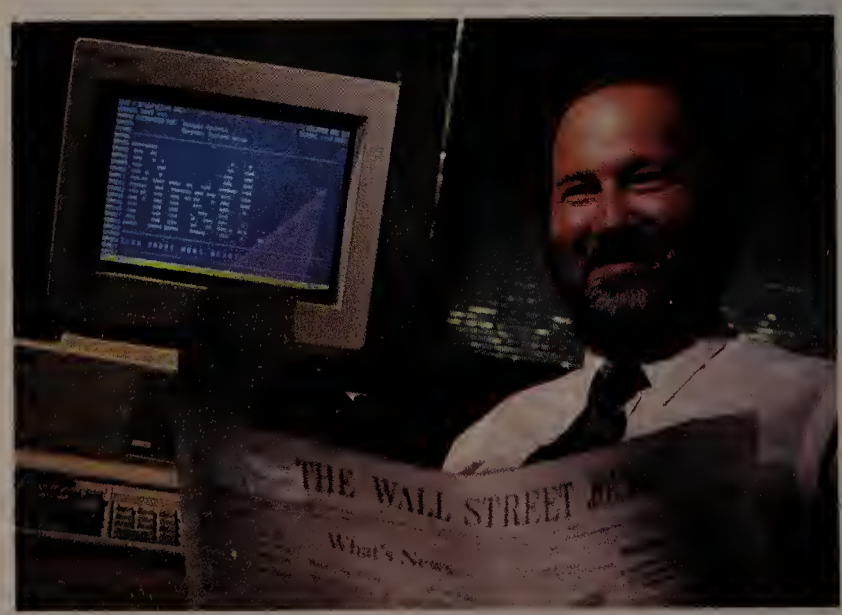
NewsEdge "really helps you stay on top of what's going on," agrees Sheldon Laube, national director of information and technology at Price Waterhouse in New York City. The accounting/consulting firm, which is testing NewsEdge on about 100 desktops, finds that it can access more news more quickly than through newspapers. "It's really important to be able to watch for news about our clients and our industries," and get much broader coverage than any newspaper provides, notes Laube.

Users filter the news for just the articles they want by creating personal profiles with their own keywords; they're alerted whenever an incoming story matches any of those keywords. Because NewsEdge can work as a *Windows* application, "we can have it running all the time watching for news articles on companies we're interested in," says Carla Elbert, manager of Microsoft's treasury department.

Neither NewsEdge nor its peers come cheap. While a stand-alone version is available, most NewsEdge installations are networked. McLagen estimates that a customer willing to enroll 5000 to 10,000 employees pays between $85,000 and $100,000 annually, depending on the number of wire services selected.

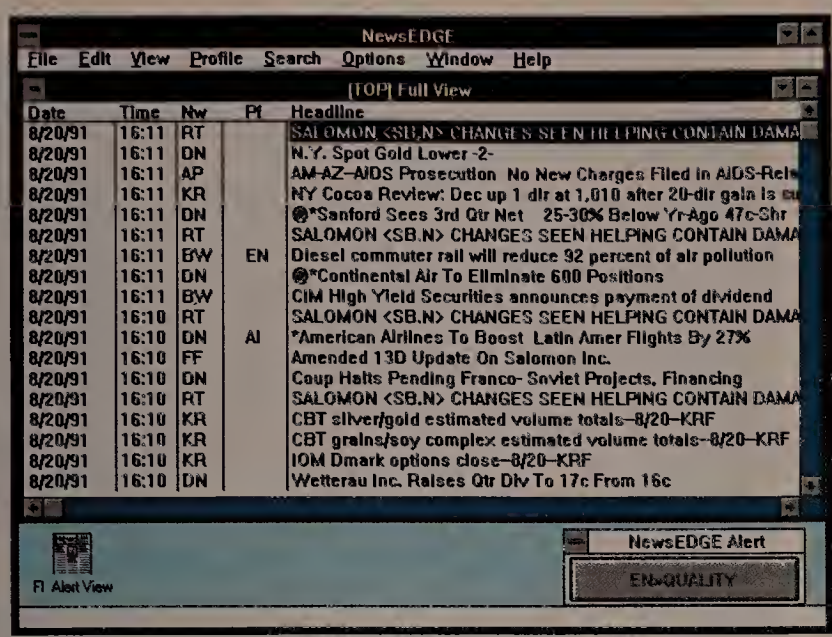
Further Fine-Tuning

First!, a service from Individual Inc. in Cambridge, Massachusetts, goes still further in



ANDY FREEBERG

Individual's First! is like a Wall Street Journal tailored to his needs, comments Hewlett-Packard's Ken Sobel-Feldman.



Desktop Data's NewsEdge can continually filter news from dozens of services and feed it into other Windows packages.

tailoring its reports to the user's needs, using AI-based software to weight different keywords in a user's profile. Each night the five or ten most relevant stories are sent to the customer via fax or E-mail. "It's like picking up a *Wall Street Journal* every morning that's particular to your needs," says Ken Sobel-Feldman, strategic marketing manager with Hewlett-Packard's Network Systems Group in Cupertino, California.

Individual Inc. sends out regular report cards asking customers to grade the stories they've received as relevant or irrelevant. With this feedback, the relevance rate climbs above 75 percent. First! is priced by the number of stories in the report and whether it is delivered by E-mail or fax. A company receiving eight to ten stories a day distributed by E-mail to 100 users can expect to pay $14,000 a year.

Verity in Mountain View, California, has augmented its Topic document-retrieval technology with Topic Real-Time. The Real-Time software acts as a "knowledge agent," scanning documents based on content as they arrive from on-line services. Verity claims hit rates two to three times that of a simple keyword profiler.

"We appeal to those who are willing to put in a network with 50 to 100 users and who want to store the information and do data searches on it," explains chief executive Michael Pliner. "Our customers really buy a data base as opposed to just a news service." With 95 employees, Verity is roughly triple the size of Desktop Data and Individual.

All three services emphasize the need to integrate well into user environments. "We're trying to assimilate a rich collection of external sources with a variety of customer-installed data highways," says Desktop Data's McLagen. Accessing this information "can't be something else the executive has to do—it has to fit into his [current] system."

Ultimately, adds Individual president Yosi Amram, "the issue today is not how you get one person better informed, but how you get the organization better informed."

—John H. Mayer

Kathleen A. Gow is a writer in Medford, Massachusetts; Patrick Marshall is a freelance writer in Silver Spring, Maryland; and John H. Mayer writes about technology in Belmont, Massachusetts.

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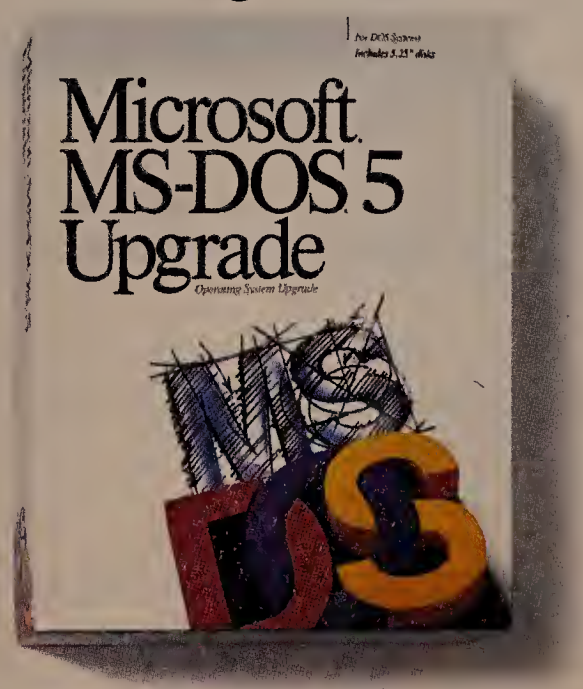

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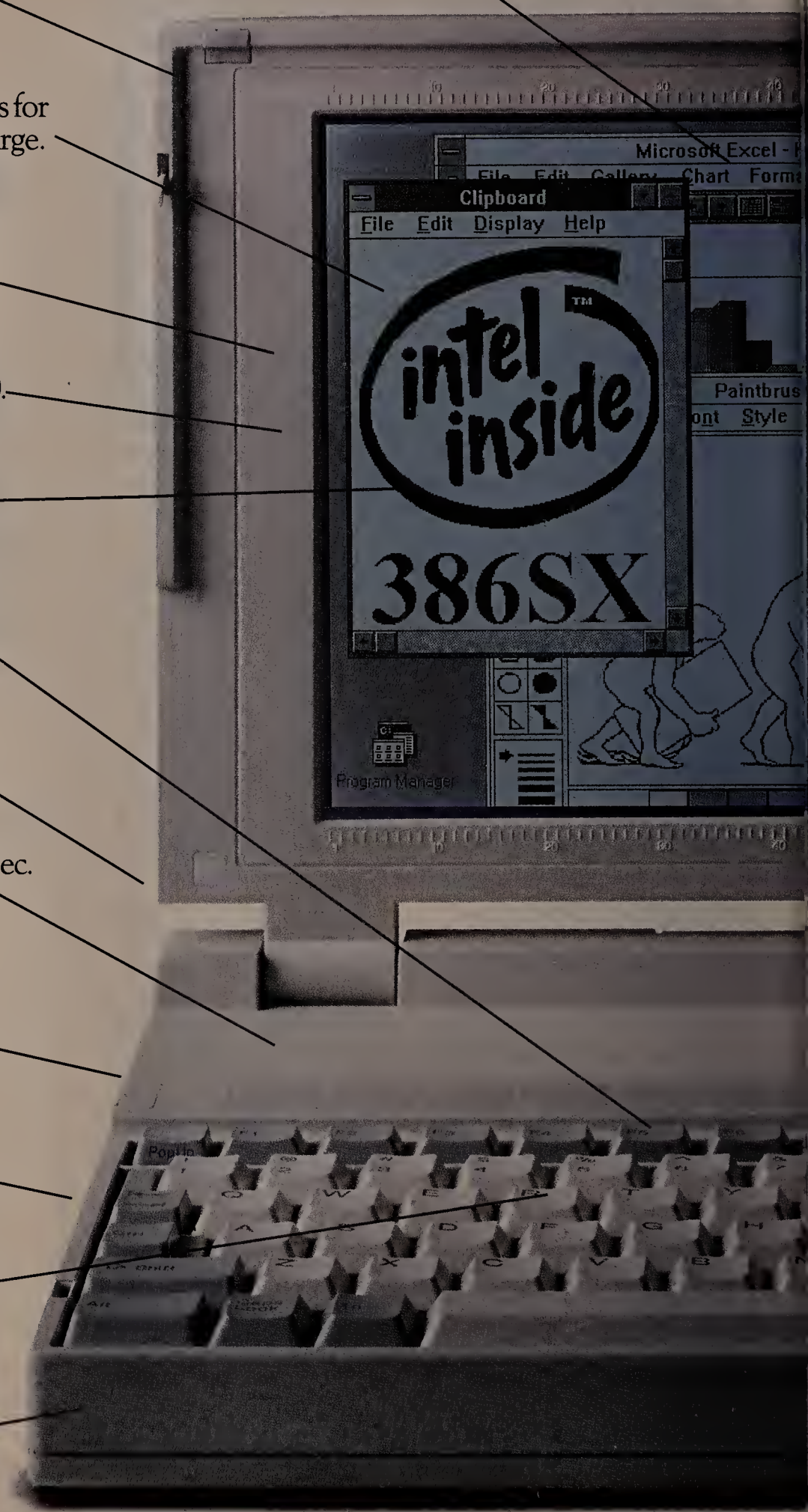

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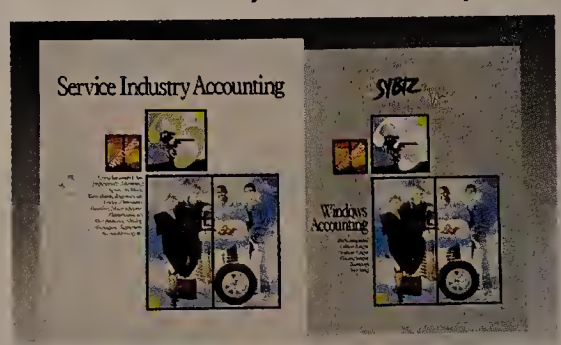

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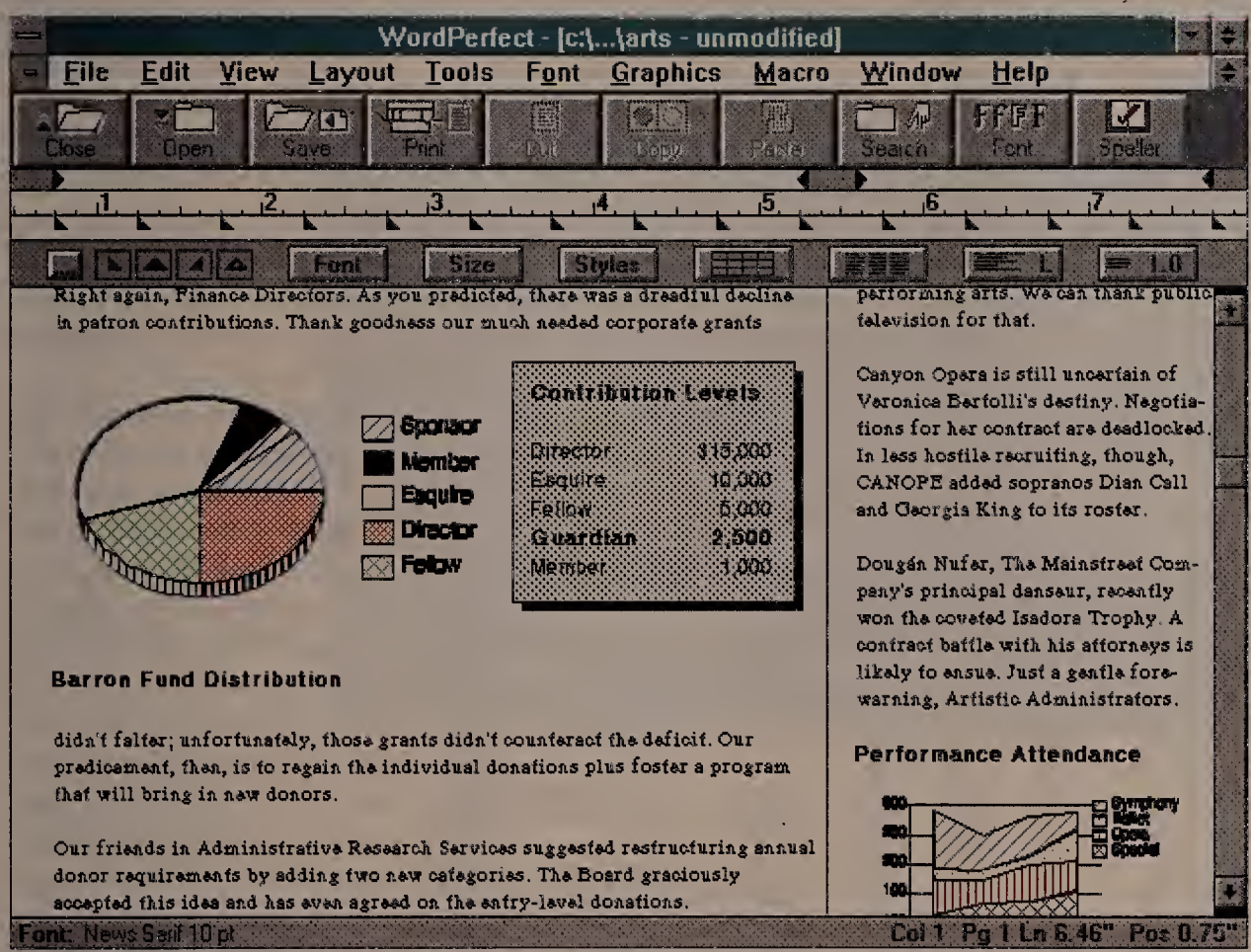
Windows Gives WordPerfect A Shiny New Look

The world's most popular word processor picks up a dazzling new interface, customizable buttons, and a bagful of formatting and editing tools.



A configurable button bar, flexible document formatting tools, a familiar 5.1 keyboard option, and a clean Windows interface make WordPerfect 5.1 for Windows well worth waiting for.

Bronwyn Fryer

We've all gotten a bit impatient waiting for the folks in Orem, Utah, to bring *WordPerfect 5.1 for Windows* into the light. Once you get a good look at it, though, you may never want to go back to DOS-based *WordPerfect*. This long-awaited product is infinitely more flexible and fun to work with than previous DOS versions. The price you may pay to upgrade to *Windows* will be worthwhile, because *WordPerfect 5.1 for Windows* alone will cut innumerable clumsy steps from your word processing tasks.

Windows programs such as *Word for Windows* and *Ami Pro* are already ahead on the *Windows* road, and *WordPerfect 5.1 for Windows* lacks some features those competitors provide. But *WordPerfect 5.1 for Windows* excels in ease of use. It incorporates all the familiar and powerful features of *WordPerfect 5.1*—and, for many users, makes them accessible for the first time.

Transported to the *Windows* world, *WordPerfect*'s interface is well designed and flexible. You can do all the standard *Windows* tricks, such as opening as many as nine documents at a time and switching back and forth between tasks or programs. And the program has a few big advantages over other *Windows* word processors—like a classy configurable button bar, a flexible *PageMaker*-like ruler for quick formatting, the ability to accept almost all your familiar *WordPerfect 5.1* keystrokes with an optional keyboard driver, and transparent importing of *WordPerfect* DOS files.

Well, Bust My Buttons

The most innovative feature of *WordPerfect 5.1 for Windows*

SNAPSHOT

WordPerfect 5.1 for Windows

WINDOWS The *Windows* version of the most popular word processor offers a hot new interface with many convenient graphics and formatting features.

KEY FEATURES

- **Customizable button bar for point-and-click commands**
- **Ruler for easy formatting**
- **Figure, Draft, and Graphic editing modes**
- **Preretrieval views of text and graphics files**
- **File Manager aids navigation**
- **Optional WordPerfect 5.1 keyboard driver**

AVAILABILITY

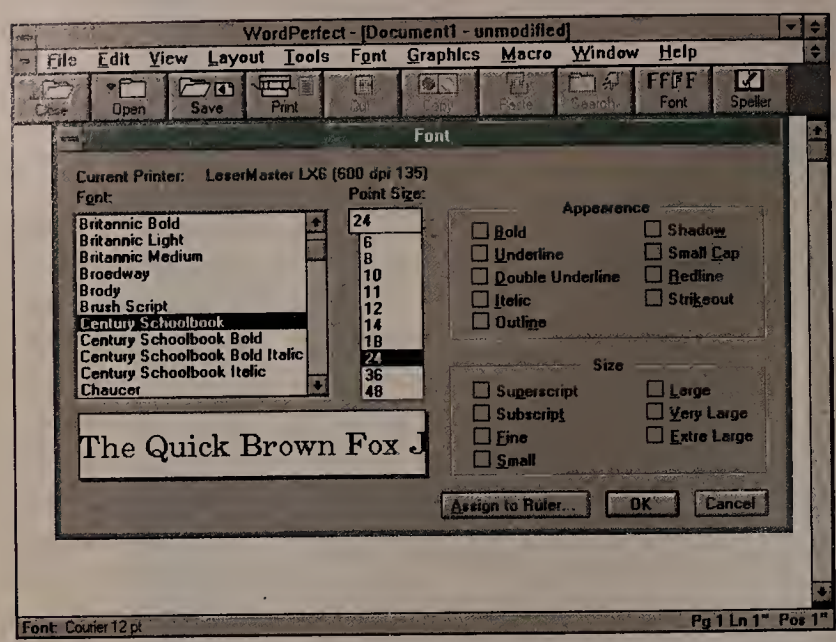
Immediate

PRICING

$495; upgrade from DOS WordPerfect 4.2, 5.0 or 5.1 $125 (contact vendor for trade-up offers from other word processors)

WordPerfect Corp.
1555 N. Technology Way
Orem, Utah 84057
800/451-5151
801/222-5077 (fax)

Reader service no. 711

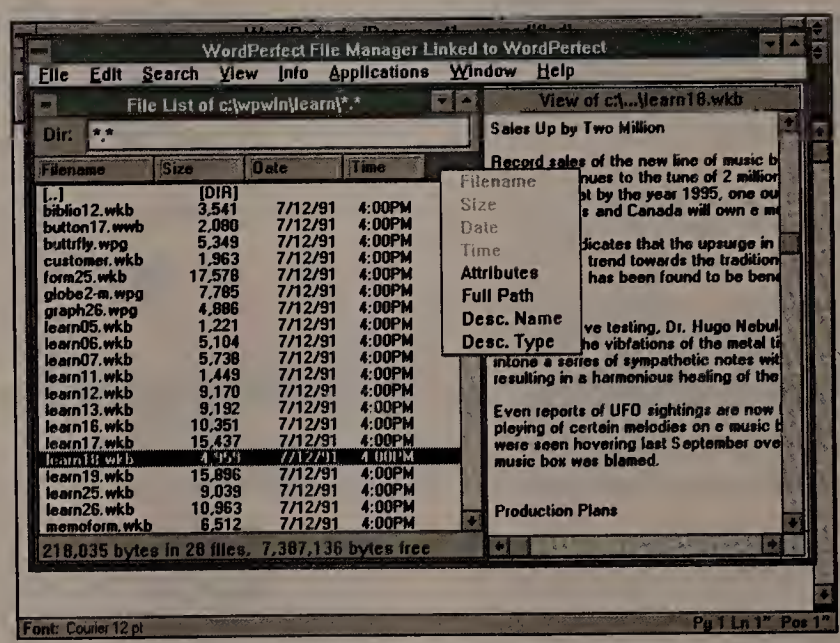


With WordPerfect 5.1 for Windows, you don't have to switch to Preview mode to see the results of your formatting choices. A dialog box shows what font selections look like before you apply them to your document.

is its button bar—a configurable set of the most frequently used command icons, which you can place along the top or sides of the *WordPerfect 5.1 for Windows* screen. Unlike other *Windows* word processors such as *Ami Pro* or *Word*, *WordPerfect 5.1 for Windows* doesn't make it difficult to figure out the meaning of an icon, because you can see the name of the function and the associated icon simultaneously. You can also customize the 3-D buttons to include only the function name or icon. The button bar makes tasks that are labyrinthine or even impossible in *WordPerfect 5.1* as simple as clicking on a button, giving you much faster access to features and functions.

One click invokes the commands, styles, or macros you've placed on the bar. You can see ten buttons at a time and place them in any order you'd like; when a command is active, the button stays pressed. When you want to see more buttons, you simply scroll along the bar. You can also create as many buttons and button bars as you want, each including the different features you use for different tasks—say, writing a letter or producing a newsletter.

Those who like to cast a little macro magic can create all sorts of new buttons, including a macro button to select other button bars. But although a pulldown menu makes it easy to record a macro, the macro language isn't as muscular as those in *Ami Pro* and *Word for Windows*, so you can't create dialog boxes or add commands to menus. And although *WordPerfect* will ship a macro conversion utility for simple commands, the more advanced macros you wrote for *5.1* won't work in the *Windows* product.



A File Manager in WordPerfect 5.1 for Windows shows attributes of all your documents, helps you navigate your hard disk, and gives you a sneak preview of a file before you access it.

A Benevolent Ruler

Formatting in *WordPerfect 5.1* can be a big headache; you may have to keep switching back and forth from preview mode because you can't judge the effect of your changes. But *WordPerfect 5.1 for Windows* makes it easy to see what you'll get. A powerful ruler gives you immediate access to those formatting tasks you use most frequently. You can set up margins and tabs just by clicking and dragging with a mouse. A Columns button lets you select up to 5 columns with a click, or up to 24 from the dialog box. You can adjust gutter space between columns by clicking on the ruler marker and dragging the column edge where you want it. If you want to get rid of your tabs, gutter spaces, or tables, just highlight them with the mouse and drag them down into the screen area, where they disappear.

If you've ever tried to create tables in *WordPerfect 5.1*, you're in for a real treat. A Table button on the ruler lets you click and drag to create any size grid, and you can use the ruler to adjust cell width. Unlike with *Ami Pro*, however, you can't grab a handle on the table itself to resize the table horizontally; you have to put up with the inconvenience of resizing through a dialog box.

The ruler also lets you choose line spacing, justification, font, and font size by clicking on a button. You can assign or delete fonts from the ruler to list only those you use most often, and style-by-example settings let you automatically assign a style or font to the ruler for easy access.

Go for the Graphics

Most *Windows* applications make you experiment to see how a font will look on paper, or retrieve a file before you can see what's in it. *WordPerfect 5.1 for Windows* avoids that inconvenience with an *Ami Pro*–like Viewer that lets you see what a font will look like in the font dialog box, or view graphics or text files before you retrieve them.

In graphics editing mode, the screen fonts are crisp and clear; besides the standard *Windows* system fonts, *WordPerfect 5.1 for Windows* supports all *Adobe Type Manager*, *SuperPrint*, and *FaceLift* fonts. Desktop publishing purists can adjust kerning and pick from a spectrum of thousands of colors with a single click. To find a particular graphic, the Viewer lets you browse through files in 16 formats (including PCX, TIFF, GEM, EPS, and BMP).

A double-click on the image puts you into the figure editor, where you can use the mouse to reverse, crop, rotate, scale, outline, or stretch the image. You can zoom in to magnify a particular area in 25 percent increments, with up to a 200 percent enlargement.

Another feature lets you place horizontal or vertical lines of any width in your document, so you can set off headers or sidebars. Unlike with *Ami Pro*, however, which lets you draw ovals, circles, and other shapes, you can

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draw only box shapes with *WordPerfect*.

If you are the mathematical type, the equation editor lets you edit and format equation symbols automatically, saving them as graphics. An on-screen display also lets you pick from 1500 mathematical, scientific, foreign language, and other characters.

There's No Place Like Home

Here's a crucial point for veteran *WordPerfect* users who find their fingers stumbling a bit in *Windows:* If you want to get back to familiar territory fast, you can switch to an optional *WordPerfect* keyboard driver that uses almost all the familiar *WordPerfect 5.1* keystroke commands from within the *Windows* interface.

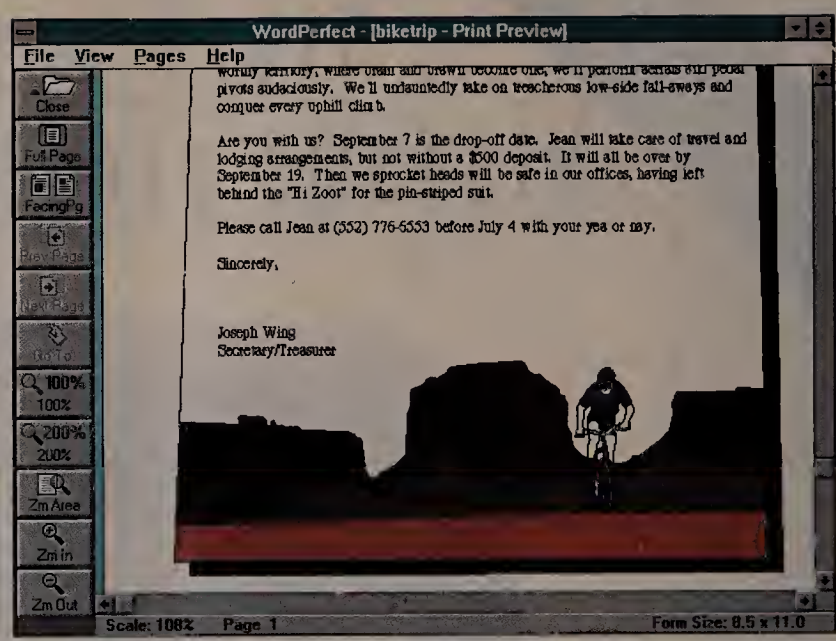
You can also retrieve your *WordPerfect* document in *WordPerfect 5.1 for Windows* transparently, without having to stop for a conversation with a dialog box. Translations from other non-*WordPerfect* formats are done through a dialog box.

A Draft editing mode lets busy people get their work done fast. The uniform font in Draft mode makes characters easy to read, and you can switch back to the regular mode for formatting. *WordPerfect*'s familiar redlining and group editing features are easily available from the Tools menu. And if you like to know exactly where every command is placed, a click above the scroll bar activates that crusty old standby, Reveal Codes.

Perfect Road Maps

If you tend to get lost in forests of files, *WordPerfect 5.1 for Windows*'s File Manager is a great guide. It automatically searches your entire disk for the file you need, or even for the keyword in a file. If you want to do a manual search, a friendly Navigator marks your path as you go. You can assign a nickname to a directory or a group of files and then put them on a Quick List for quick retrieval. The Viewer feature is here too, letting you preview graphics and text files.

You can also use the File Manager to easily launch other *Windows* applications or set up DDE hot links to any other DDE-supported application; a dialog box asks you



Using the Print Preview feature in WordPerfect 5.1 for Windows, you can zoom in for a closer look at any portion of your document with up to a 200 percent enlargement.

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which file you want to link to.

For beginners, *WordPerfect 5.1 for Windows* provides friendly, context-sensitive, *Windows*-style help—an infinite improvement over DOS-based help. An easy-to-use *What Is?* selection tells you what things mean or how to perform a function, although the command doesn't include the full tutorials found in *Ami Pro*. A status line at the bottom of the screen also prompts you through pulldown menus, though it's not quite as thorough or as easy to read as *Ami Pro*'s built-in coach.

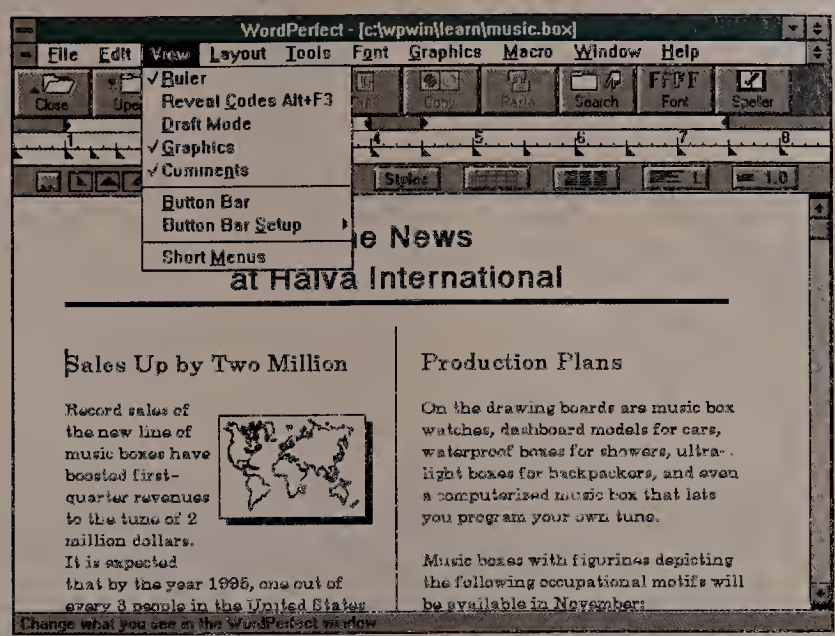
A Couple of Potholes

Unfortunately, the road through *WordPerfect 5.1 for Windows* isn't all smooth. You can't edit in Print Preview as you can in *Ami Pro*. And, again unlike *Ami Pro*, this release includes neither integrated drawing nor charting modules. So to create drawings or charts, you have to go through the hassle of launching another *Windows* application and pulling it in through the *Windows* Clipboard.

More serious is the lack of a collapsible outliner; the outliner is the same as in *WordPerfect 5.1*. WordPerfect plans to provide a collapsible outliner in the next release of the *Windows* product.

Another warning: *WordPerfect 5.1 for Windows*, like most *Windows* applications, requires a sturdy 4MB 386SX to run smoothly. Even so, you can expect it to be a mite slower than the DOS product. Finally, the prospect of a shift to *Windows* might be daunting for DOS users who have grown comfortable with the labyrinthine commands of *WordPerfect 5.1*.

But if you've been waiting for a good reason to make the move to *Windows*, you just ran out of excuses. This package should justify that move all by itself. Once you're comfortable with *Windows*, you'll find that *WordPerfect 5.1 for Windows* is a good-looking, albeit incomplete, *Windows* word processor that makes all the powerful features of *WordPerfect 5.1* much more accessible.



No more digging six command layers deep to create the special effects you want. With WordPerfect 5.1 for Windows' pulldown menus, tailoring commands and creating documents with your own special touch is a simple matter.

Bronwyn Fryer is an associate editor for PC World.

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Screen	14" 0.26mm Sony Trinitron	14" 0.28mm	14" 0.28mm	14" 0.28mm/Very Low Radiation	14" 0.28mm	14" 0.39mm
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Horizontal Scan	31KHz-55KHz	31KHz-60KHz	31KHz-38KHz	31KHz-38KHz	31.5KHz	31.5KHz
Compatibility	UltraVGA, VGA, XGA, 8514/A	UltraVGA, VGA, XGA, 8514/A	SuperVGA, VGA, XGA, 8514/A	SuperVGA, VGA, XGA, 8514/A	VGA	VGA
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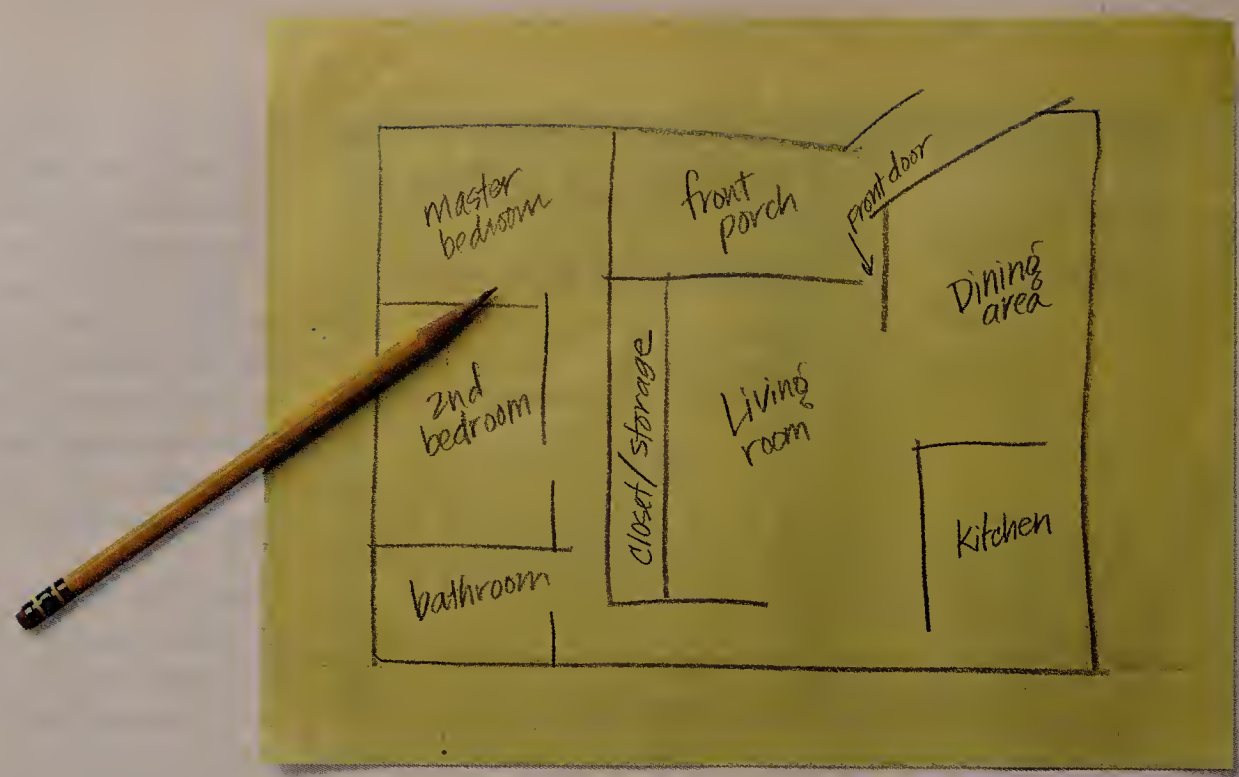

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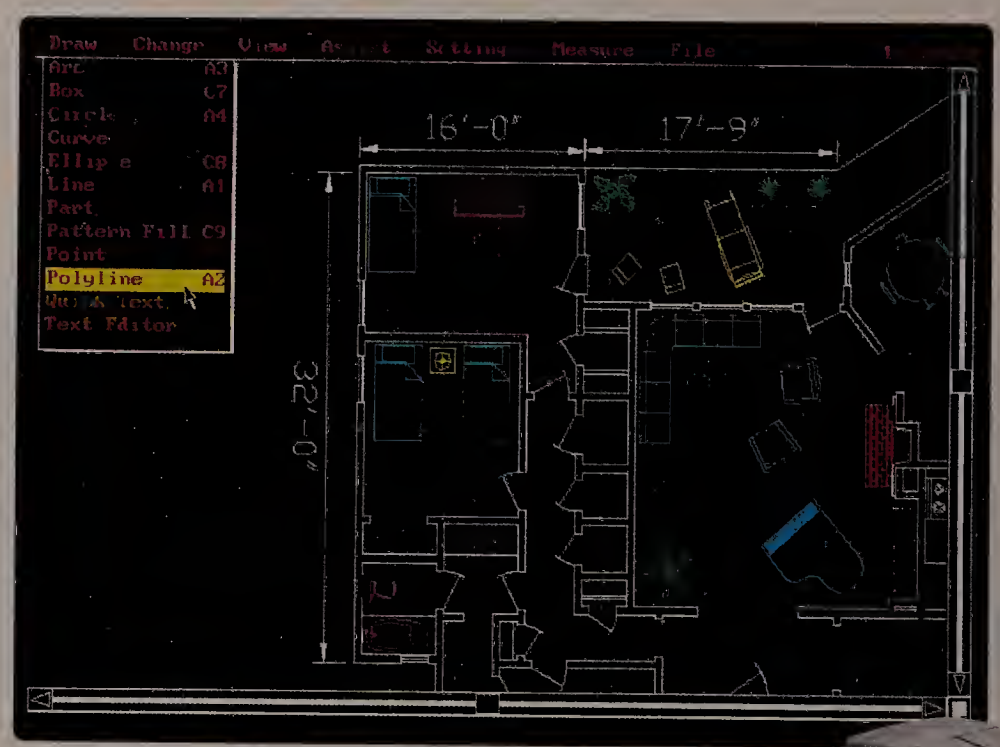

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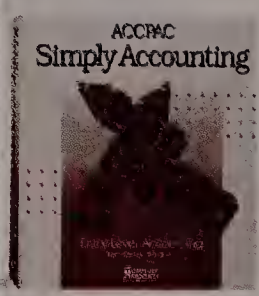

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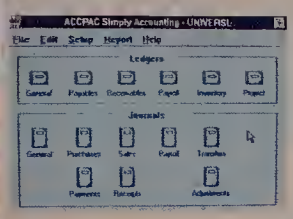

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NEC's Twin Peaks: Hot PCs, Hot Monitors

When NEC's engineers went to the drawing board, they dreamed up some great monitors—and new desktop systems with the fastest VGA yet.

NEC's PowerMate 386/33i works with the 4FG—a new, 15-inch, high-performance monitor—to provide a better than 200 percent boost in VGA performance.

ANNE NADLER

Robert Lauriston

A box is a box is a box, right? No way, at least not when you're talking about the new line of Image PCs from NEC. From a souped-up video system to snap-in drives and automatic monitor detection, these systems are aggressively different. To go with them, NEC has unveiled a line of MultiSync monitors that add special color controls and flicker-free performance and reduce possibly harmful electromagnetic emissions.

Pushing VGA to the Max

The most distinctive feature of the two fastest and most expensive Image PCs, the PowerMate SX/20i and 386/33i, is blazing VGA performance. Normally video data moves from a PC's CPU to its display board via the relatively slow 8-MHz system bus. NEC has developed a patented video bus (Image Video) that moves screen data at full CPU speed. NEC claims a boost of up to 200 percent with its 20-MHz system, and the 33-MHz should be even faster. This rapid performance will be most noticeable with video-intensive programs such as *Windows*.

If you use one of NEC's MultiSync monitors, the PowerMate SX/20i and 386/33i can detect the monitor's bandwidth and automatically crank up the video output to the highest compatible frequency, minimizing flicker and maximizing resolution.

The third entry in the Image series is the PowerMate SX/16i. The Image label is a bit misleading here, because while this 16-MHz 386SX uses the same case as the SX/20i and the 386/33i, it doesn't have the high-speed Image Video or monitor-detection feature.

All three Image PCs are appealingly easy to upgrade; most user-installable options require no tools. You open the case simply by turning a knob, and you don't need even a screwdriver to install a floppy drive—it just snaps into place. In most systems, upgrading the BIOS means a ROM swap; with the new NECs, rewriting the BIOS is as easy as slipping a floppy disk into the drive and

SNAPSHOT

PowerMate SX/20i, 386/33i

Unique high-speed video systems promise to give Windows users a major speed boost.

KEY FEATURES

- **High-speed VGA graphics installed on motherboard**
- **Easy-open case, no tools required for adding drives**
- **Up to 26MB of CPU-speed RAM in SX/20i, 64MB in 386/33i**
- **CPU upgrade by motherboard swap**
- **Upgrade BIOS from disk**

AVAILABILITY

Immediate

PRICING

SX/20i with 4MB RAM, 120MB hard disk, keyboard, DOS 5.0, Windows, and PFS:WindowWorks $2457 (mouse not included); 1MB video RAM expansion (required for 256-color or 1024 by 768 display) $49; 386/33i in same configuration $3649 (includes 1MB video RAM); multimedia upgrade kit (CD ROM player and sound board) to be announced in January

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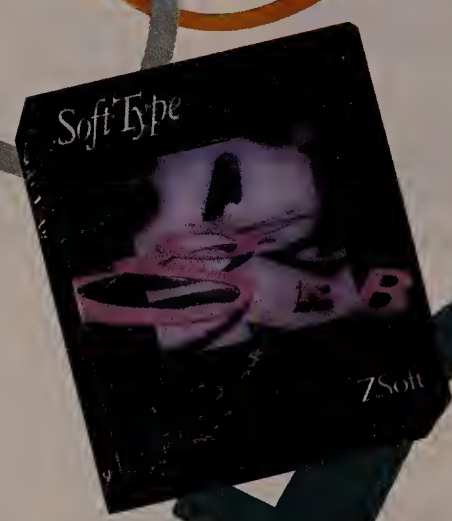

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ANNE NADLER

The SX/20i and low-cost 3FGx provide similar VGA benefits.

running a setup program. Because all disk and video controllers are built onto the motherboard, all four slots remain free. There's room for four drives, and although only two bays are externally accessible, an innovative two-in-one drive lets you fit a 3½- and a 5¼-inch floppy in a single bay, so you can use the other for a tape backup or CD ROM drive. Plugs in the front of the case pop out to let you install the speaker and microphone jacks for NEC's multimedia upgrade kit.

NEC is joining the trend toward bundling and installing productivity software. The company is preloading its hard disks not only with DOS 5.0 and *Windows* but also with *PFS:WindowWorks*. That means plug-and-play convenience—with considerably more power than from *Windows* alone. Unlike most vendors, NEC installs its super-VGA drivers directly into *Windows*, so there's no confusing secondary installation before you can take advantage of high-resolution graphics.

Each system comes with a 45MB, 60MB, or 120MB IDE hard drive, and all three will eventually be upgradable to the latest 486 CPU via a motherboard swap. A modular design means the swap will take just 10 to 15 minutes, and NEC is planning a motherboard buy-back program to make the upgrade more affordable.

Color-Matching Monitors

NEC's four new MultiSync FG monitors replace its popular 2A, 3D, 4D, and 5D standbys. The 3FGx offers a 15-inch screen and resolution of up to 1024 by 768; the 4FG, also 15 inches, adds special color controls and runs at 1024 by 768 without noticeable flicker. The 17-inch 5FG and the 21-inch 6FG—pricier units likely to end up on CAD users' desktops—were not available for preview at press time.

For all their innovative new features, the 3FGx's and 4FG's good looks make the biggest impression. The screens are much brighter and sharper than previous MultiSyncs', and along with slightly bigger tubes, the FGs paint images so they fill the entire screen without distortion.

Assuming your super-VGA board can put out the signals, the 3FGx and 4FG can run at a stable 640 by 480 (standard VGA) or 800 by 600 at 72 Hz—

(continues on page 102)

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As PC Magazine said, the ZEOS Notebook "offers a top notch combination of power, weight, features and price..." And you can pick your power! Choose our '386SX-16MHz version or go for the incredible new ZEOS '386SX-20MHz. Combine either with our high speed hard disk, built in 1.44MB floppy drive, VGA and more—you've got the greatest notebook going at any price!

INCREDIBLE DESKTOP FEATURES IN A NOTEBOOK.

In fact, it's really like owning a full featured desktop that you can take with you anywhere! Look closely at the details. Like our crisp 10" VGA display. The ultimate in sparkling clarity, it features advanced fluorescent backlighting for vivid VGA graphics. Then, the drives.

Two drives are better than one! First, your notebook will include our whisper quiet high speed, high capacity hard disk. It will read and write your data so fast chances are you'll hardly know it's there. Then we're building in an industry standard 1.44 Megabyte 3.5 inch floppy as well.

While most notebooks don't include a floppy drive at all, you're really going to appreciate your ZEOS notebook's industry standard 3.5" floppy. It makes loading software and transferring files a breeze. Simply toss in your 1.44 and it's done. Anyway, can you imagine a desktop system without a floppy? We couldn't either. That's why your ZEOS notebook has one. It's great!

But the features of your incredible new ZEOS Notebook don't just stop there. Detail after detail we're giving you more than anyone else. Much more, for much less. Take a closer look.

DETAILS MAKE THE DIFFERENCE!

For instance, the battery system of your new notebook is the most advanced on the market. You can quick charge, or trickle charge, any time your system is plugged in. You can also take the battery out and use the optional charging stand if you wish.

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Either way, you're sure to appreciate our light weight snap-in, snap-out battery packs. They're so light and easy to use, you can easily take an extra one with you on those really long trips. You can get even more life out of a single charge by using our programmable power management system. Hour upon hour of Notebook computing power!

CONNECTIVITY TOO!

Your new ZEOS notebook is a great connectivity tool. Utilizing our optional built-in 2400 baud MNP Class 5 modem, connectivity buffs will find themselves logging on at every turn. And speaking of connectivity, we've kept the I/O easy to use too. Because unlike many of the others, your new ZEOS notebook has the same industry standard port connectors you'll find on your larger desktop system. Completely compatible! Serial and Parallel ports; even an external VGA connector. All industry standard and ready to go the minute you receive your system.

It's attention to detail that makes the difference. Tens of thousands of hours of development time have been invested. We've been thinking and re-thinking exactly what you want in a notebook, and now we're building it for you. We think you'll agree, it's an incredible product. Plus, your new notebook is backed by the best support in the industry, 24 Hours a Day.

$1995!

ZEOS 24 HOUR A DAY SUPPORT.

After all, it was ZEOS that invented 24 Hour a Day Toll Free Sales and Technical Support. We're always here to help. Any time you need us your telephone is a Toll Free Hotline—direct to your own personal Technician. 24 Hours a Day, 365 Days a Year. Now that's ZEOS value. But we don't stop there either.

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- Built in High Density 3.5" 1.44MB floppy drive.
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- Quick charge or trickle charge using included AC power adapter.
- Extra battery packs and external charging stand available.
- 82 key keyboard. True 101 key emulation.
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- VGA port for external VGA color display. Great for demos!
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The ZEOS Guide to the Perfect Notebook:

PROCESSOR: PC Magazine recommends a '386SX processor pointing out that, "Finally, we've got portable PCs capable enough to be your *only* PC." That's why ZEOS offers you a 16MHz or a 20MHz '386SX! More power for you. After all it's just like a take-anywhere desktop!

DRIVES: *Two drives, built in!* A whisper quiet high speed 20 Megabyte or larger hard disk *plus* a 1.44 Megabyte 3.5 inch floppy. Remember, with a built in floppy drive you don't need to fool around with strange interfaces to load and transfer files.

VIDEO: ZEOS raises the ante to VGA! We're talking about bright and crisp VGA displayed on one of the largest notebook screens in the industry. The display also features advanced fluorescent backlighting, 32 grey scales and 640 x 480 resolution. Plus, it can be adjusted to any position over a 135° angle and features easily adjustable brightness and contrast controls. Easy viewing under virtually any lighting conditions. You can connect to an external VGA color monitor too!

GREAT BATTERY FEATURES: Every battery feature you want. You can plug your notebook in and "quick charge" the battery in less than one hour or you can "trickle charge" while in use. Plus, your battery easily snaps out allowing the quick installation of an optional replacement battery. It's great to be able to carry a light weight spare for those especially long trips. An optional battery charger stand is available as well.

INTELLIGENT POWER MANAGEMENT: Your new ZEOS notebook features an intelligent programmable power management system if you wish to use it. Based on the length of time since your last keystroke, you may reduce CPU speed, display screen backlighting etc. Full power is immediately restored at the stroke of any key. The system even knows *not* to use the power management system when you are operating on AC power!

CHECK IT OUT!

Now, you can take desktop computing power anywhere! Your ZEOS notebook has many features of obvious importance. Also, there are a number of features that are subtle yet critical to your ultimate satisfaction. We'll go over them here one by one. We think you'll agree your new ZEOS Notebook is the one for you!

SYSTEMS STATUS AT A GLANCE: Yes, monitor eight key system components at a glance! We've equipped your new notebook with eight LED indicators which monitor disk access, keyboard functions and power status. There is even an audible alarm which may be programmed to inform you of a low battery condition and to let you know if the cover is closed with the power on. Now that's one smart notebook!

DESKTOP KEYBOARD FEATURES: We're talking 82 full size keys with full 101-key emulation. And the keyboard isn't squeezed either. The distance between the "Q" key and the "[" (left bracket) key measures 7.5 inches, just as PC Magazine suggests. The keys are of standard size, plus touch typists will love our full 3.5mm keystroke. Type for hours and love it!

CONNECTIVITY AND I/O: Keeping in touch is easy when you order our internal 2400 baud MNP Class 5 modem. Simply plug in the phone line and dial away. How about I/O ports? Many notebooks don't have them and if they do they're often non-standard. But your ZEOS notebook has *industry standard I/O*—serial, parallel and VGA. Just like your desktop!

FCC & UL APPROVALS: Your new ZEOS notebook features both FCC Class B and UL approvals. We've also met CSA and VDE requirements too, just for good measure. Quality and reliability.

WATCH THE DETAILS TOO: Like memory expandability. One Meg comes standard, you can also order a total of 3 or 5MB as a factory option. And lots of other details. Like a recessed power-on reset button, a soft carrying handle, built in speaker and more. You're going to love it! And there's no reason to wait.

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ZEOS IS THE LEADER

10 Good Reasons To Buy From ZEOS®

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Reason #1
"Overall Excellence."

As *PC Magazine* said "Price is always a consideration. So are benchmark test results. But both factors can be deceiving, which is why we consider them in the context of other aspects that will make the difference months and years down the road."

These are the attributes which *PC Magazine* used in awarding ZEOS the coveted Editor's Choice, not once but *eight* times. And "Overall Excellence" are the very words *PC Magazine* used in describing ZEOS systems comparing them to all others.

Reason #2
Dazzling Performance.

In one recent '386 review, *PC Magazine* awarded ZEOS Editor's Choice. "The ZEOS '386 blows away every other computer... a smart choice" is what they said. And in another recent review, *Government Computer News* said the ZEOS 33MHz '386 is "arguably the fastest MS-DOS and OS/2 micro in the world."

Dazzling Performance is built into every ZEOS system. It's a key component of ZEOS Overall Excellence.

Reason #3
Exceptional Quality.

PC Resource Magazine put it this way, "ZEOS... provides quality comparable with IBM or Compaq and does so for about 70% of the price." ZEOS uses only the very best components. And every system is fully tested and burned-in right in our own labs.

intel inside ™

Reason #4
Value.

InfoWorld says, "We find the ZEOS '386 an excellent value. Speed: Excellent. Compatibility: Excellent. Value: Excellent." *Personal Computing* said, "ZEOS... is the best value we've come across... its performance is right up there with the slickest, most expensive PCs you can buy."

Reason #5
Warranties and Guarantees.

ZEOS believes in its products. That's why we offer each and every customer our 30 Day Absolute Satisfaction Money Back Guarantee, no questions asked. Plus, our One Full Year Limited Warranty and Express Parts Replacement Policy. Optional On Site Service is available too. Call for details.

Reason #6
24 Hour Toll Free Technical and Sales Support.

At ZEOS, the customer is #1. That's why we invented 24 Hour a Day Tech Support. For *your* convenience. If you buy a product from us we feel we should be there to help, any time of the day or night. Give us a call Toll Free! 800-423-5891. Anytime!

Reason #7
Experience.

Almost unique in the mail order computer industry, ZEOS maintains its own chip level Research and Development staff. In addition to Systems Manufacturing, we also operate our own Board Level Manufacturing facility.

ZEOS has been involved in Research and Development since our incorporation back in 1981. Our strong and experienced Research, Manufacturing and Technical Staff translates into superior factory direct computer systems for you.

Reason #8
A Sterling Reputation.

In magazine after magazine and review after review ZEOS systems are cited for Overall Excellence, for Excellent Value, as the Right Choice and so on. All of this is flattering but the most important thing is this: What do our customers think? Frankly, they love us. The systems and the support. That means more to us than anything.

Reason #9
Easy to Buy.

ZEOS systems are easy to buy. You can pick up the phone any time of the day or night and order your new ZEOS computer. And we accept MasterCard, Visa, Discover, American Express, and Corporate Purchase Orders from Fortune 1000 Companies, Colleges, Universities and Governments. Complete Leasing Programs are available as well.

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Reason #10
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When it comes right down to it, you're going to be very satisfied with your new ZEOS system. Our goal is your complete satisfaction. And that's our commitment to you. To quality. To performance. To reliability and support. To *Value*. We don't just say it, *we Guarantee it!*

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Please complete all appropriate sections, *providing at least two years residence and employment history.* **THIS IS NOT A CREDIT AGREEMENT!** One will be sent to you upon authorization of an account. (This Form Must Be Signed To Process Your Order.) All Financed Purchases Are Subject To Credit Approval. **If You Have Any Credit Questions, Please Call 800-421-8942 For Assistance.** Thank You!

A married person may apply for individual credit. I am applying for (please check appropriate box):

☐ **JOINT CREDIT** with another person. Complete entire application.

☐ **INDIVIDUAL CREDIT** but rely on income or assets of another person as a basis for repaying the credit requested. Complete entire application.

☐ **INDIVIDUAL CREDIT.** Do not complete Section C.**

**If you are a married Wisconsin applicant, you must provide your spouse's information as indicated, even though your spouse may not be signing the contract.

NOTICE TO WISCONSIN APPLICANTS: YOU MUST DISCLOSE YOUR MARITAL STATUS:

☐ married ☐ unmarried ☐ legally separated

A. YOUR PERSONAL INFORMATION

Name _____

Home Phone (_____) _____

Soc. Sec. No. _____ Date of Birth ____/____/____

Address _____ Apt. _____

City _____ State _____ Zip _____

Since? (Mo./Yr.) _____ ☐ Buy ☐ Rent ☐ Other _____

Previous Address _____

City _____ State _____ Zip _____

Employer _____ Since? (Mo./Yr.) _____

Monthly Gross Salary $ _____ Daytime Bus. Phone (_____) _____

Previous Employer _____ _____ From - To

Occupation _____

Income from alimony, child support or separate maintenance payments need not be disclosed if you do not wish to have it considered as basis for repaying this obligation.

Additional Monthly Income $ _____ Source: _____

Name & Address of Nearest Relative Not Living With You _____

_____ Relationship _____

B. CREDIT INFORMATION

PLEASE TELL US IF YOU HAVE: Checking Account ☐ Yes ☐ No
Savings Account ☐ Yes ☐ No

	Y/N	How Many?		Y/N	How Many?
Bank Loan	___	_____	Dept. Store Charge Card	___	_____
VISA	___	_____	Credit Union Account	___	_____
MasterCard	___	_____	Other Major Charge Cards	___	_____
Finance Company Loan	___	_____			

C. JOINT APPLICANT INFORMATION

Joint Applicant's Name _____

Soc. Sec. No. _____ Date of Birth ____/____/____

Address _____ Apt. _____

City _____ State _____ Zip _____

Home Phone (_____) _____ Date of Residence _____ (Mo./Yr.)

Joint Applicant's Employer _____ Since? (Mo./Yr.) _____

Bus. Phone (_____) _____ Monthly Gross Salary $ _____

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I authorize ZEOS International, Ltd. or its assignees to investigate credit records and to report my performance hereunder to credit agencies. I hereby certify that the following information is furnished to you for the purpose of obtaining credit and is true and correct to the best of my knowledge and belief.

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Date _____

Joint Applicant's Signature _____

Date _____

FOR MARRIED WISCONSIN APPLICANTS:
I acknowledge that the obligation described herein is being incurred in the interest of my marriage or family.

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PC WORLD

(continues from page 92)
a frequency that eliminates flicker under most circumstances. The higher priced 4FG can also handle 1024 by 768 at 70-Hz refresh—fast enough to ease eyestrain. In addition, you might want to take a look at NEC's optional glare-absorbing filter, which eliminates 99 percent of the reflection from overhead lights and bright windows.

Both the 3FGx and 4FG are "low emission" monitors. Much fuss has been made about the possibility of very low frequency (VLF) and extremely low frequency (ELF) electromagnetic radiation from monitors causing nervous disorders, miscarriages, and even cancer. Although no conclusive evidence exists yet, and no "safe" VLF or ELF levels have been established, Sweden has taken the lead in this area and established the strictest emission guidelines in the world. The 3FGx and 4FG are among the first mainstream color monitors to adhere to these guidelines.

The 4FG is the first mainstream PC monitor to offer adjustable color—much finer control than you'd get on a color TV. The most practical use for this feature is improving the match between your screen's image and color hard copy or slides. You just print your image, hold it next to the screen, and adjust the monitor's controls until the screen image matches the printout. Because color printouts can be expensive, especially when produced by a service bureau, this feature could save you a lot of money.

Color adjustments can also improve contrast under different lighting conditions and compensate for an aging picture tube. You can program two color settings and toggle between them, which can be handy if you have two color printers, different day and evening lighting, or two people sharing a monitor.

Setting a Good Example

It's great to see a manufacturer, especially an established one, break out of the rut and try something new. NEC's high-speed video, programmable BIOS, and motherboard upgrade/buy-back program are all welcome innovations in the systems department—and adjustable color is an attractive monitor enhancement. Other manufacturers would do well to follow NEC's lead and show more imagination in their designs.

Robert Lauriston is a contributing editor for PC World.

SNAPSHOT

MultiSync 3FGx, 4FG

NEC's new monitors combine high resolution and a bright, crisp image with reasonable prices.

KEY FEATURES

- **Brighter, sharper image with higher contrast**
- **Flicker-free performance in standard-VGA and 800 by 600 resolutions; 4FG also runs flicker-free at 1024 by 768**
- **Programmable color adjustment on 4FG**
- **Reduced electromagnetic emissions**

AVAILABILITY

Immediate

PRICING

MultiSync 3FGx $749, 4FG $899; glare filter $79; prices for custom configurations not yet available.

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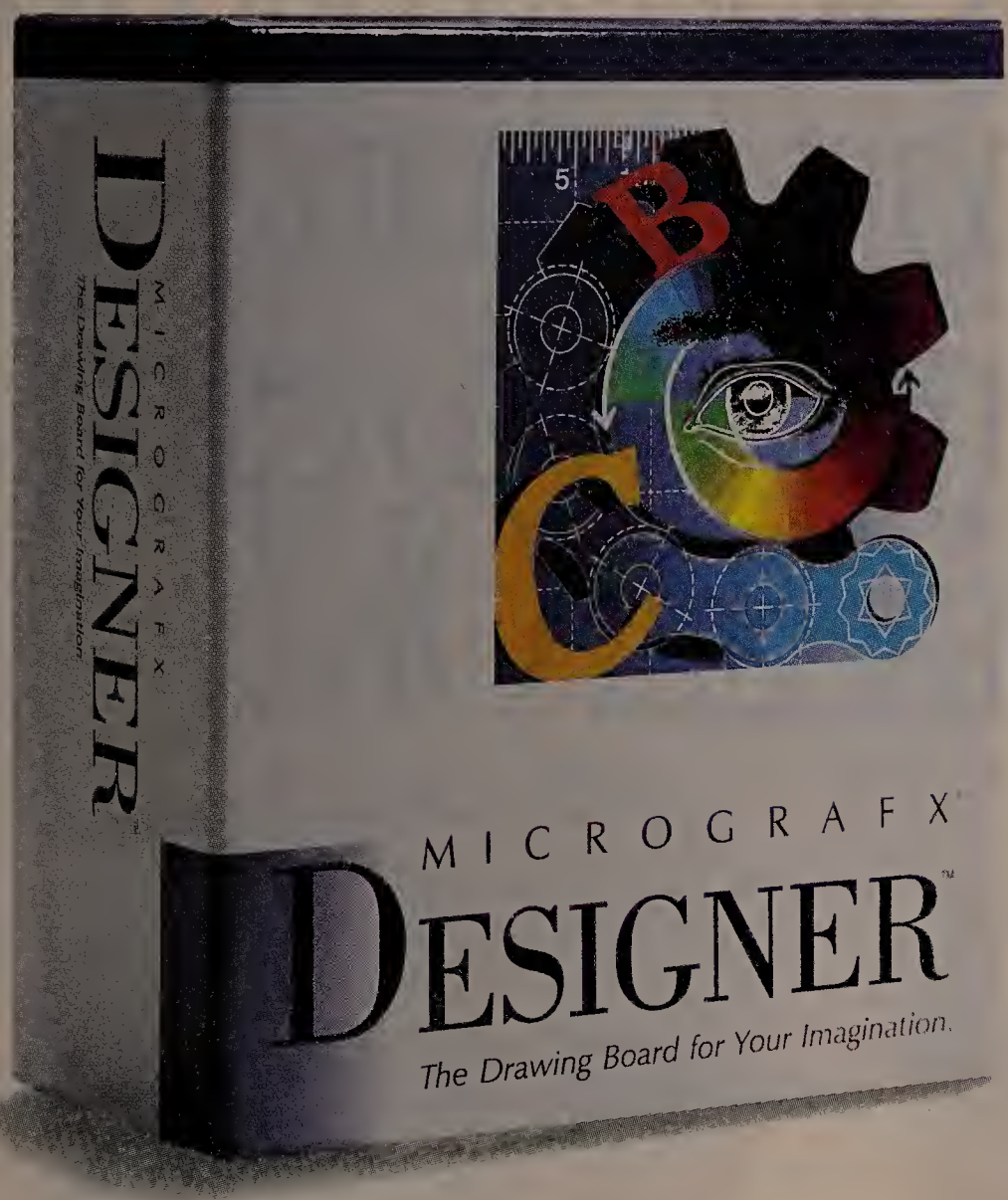

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> *PC Magazine*
> *"Editor's Choice"*

Then there's Designer's poster-size 132" by 132" drawing area. Corel's is a mere 17" by 17" – leaving you to strip pieces together for larger drawings.

And don't forget clip art. Designer is packed with over 1,700 ready-made illustrations. Corel, only 750.

If you have questions about using Designer, you can turn to help screens *or* our 24-hour telephone support. But you won't find any help screens in Corel Draw. And don't bother to call them after hours.

Features	Designer	Corel Draw
Drawing layers	64	1
Dimensioning	Yes	No
Object snap	Yes	No
Maximum drawing size	132" × 132"	17" × 17"
Edit in full color	Yes	No
Clip art images	Over 1,700	750
Named symbols	Yes	No
PageMaker 4.0 filter	Yes	No
On line help screens	Yes	No
24 hour support	Yes	No

> **The experts' verdict: "No contest."**
> *Software Digest* gave Designer five stars to Corel's three, concluding: ***"Designer provides the best overall free-form graphics package. It offers state-of-the-art features, good performance, and unmatched ease of learning and use in a sophisticated package."***

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Designer system requirements: 286 (386 recommended) IBM PC or compatible, or PS/2. 1 MB RAM (2 MB RAM recommended). 20 MB (or larger) hard disk. Windows 3.0. DOS 3.1 (or higher). Mouse or digitizing pad. Windows-compatible monitor.

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The new OL830 had to be smarter than the LaserJet® III to earn the Okidata OK!™

Smart.

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- Gives you the best font scaling and graphic output from over 5000 different software applications.
- Offers 17 scalable plus 26 bitmapped fonts, standard.
- 2 megabytes of memory for full-page graphics.
- Optional second paper tray for second sheets, alternate letterhead.
- 5-year printhead warranty. (Plus 1 year parts/labor on entire printer.)

Not So Smart.

- **Not-so-smart price: $2395.00***
- Only supports font scaling and graphics from a few hundred software applications without expensive brain surgery.
- The best it can manage without costly add-ons is 8 scalable and 14 bitmapped fonts.
- 1 meg is all you get, standard. Can't even remember one full page of graphics.
- No place to add a second tray. You're stuck with only one kind of paper at a time.
- Standard 1-year warranty. Not so smart.

If you think buying the smartest 8 page-per-minute business printer is a smart business move, we think you'll agree Okidata's new OL830 is a stroke of pure genius.

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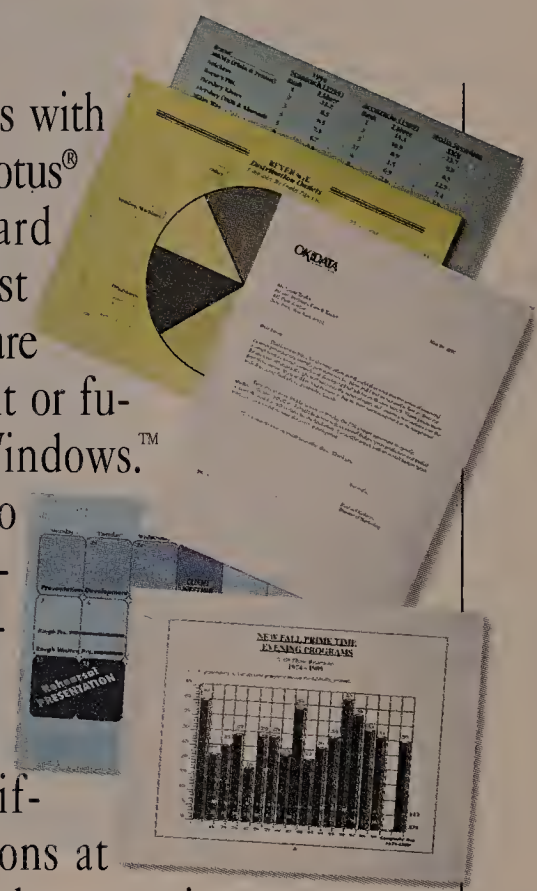
Okidata's newest printer takes just about every important feature of the LaserJet III and adds an IQ boost all its own. The OL830 offers more typefaces and fonts for better-looking documents, and more standard memory for full-page graphics. An optional second paper tray fits underneath to switch between letterhead and second sheet, or plain paper and envelopes, without reloading. And the OL830's 5-year printhead warranty is the longest in the industry. All for a suggested retail price that's hundreds of dollars less than the LaserJet III.

So Smart, It Already Knows Your Software.

To give our smart printer even more smarts, we include Printer Control Panel™ autoswitching software from LaserTools®–a $149 value. By switching automatically between *both* major printer emulations (Adobe's® PostScript® *and* HP® LaserJet), the OL830 will deliver superb output and dazzling graphics with WordPerfect,® Lotus® 1-2-3,® Harvard Graphics,® or just about any software package, present or future, DOS or Windows.™ Since it's also fully Novell® network-compatible, users on a LAN can send output from different applications at any time without printer headaches.



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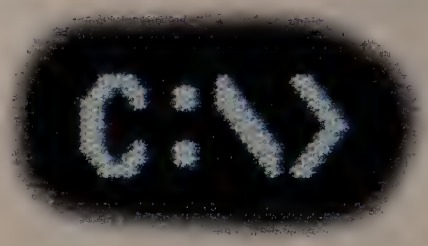

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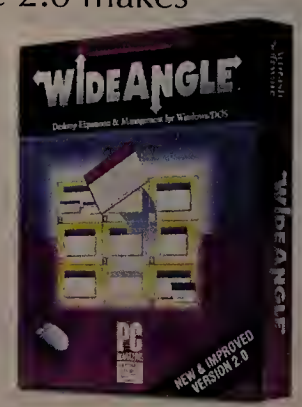
If you love Windows, but you depend on DOS, you need WideAngle 2.0™. It makes Windows and DOS work together your way - without cumbersome application switching, window shuffling or desktop clutter. WideAngle 2.0 expands your windowing desktop to nine screen-sized workspaces, each of which holds multiple Windows applications or a DOS program. To go from one workspace to another, simply click on the interactive Power Ike™ icon, or use WideAngle's equally powerful hot keys. Click on XRAY View™ and 'see through' a screenful of windows to instantly find, activate, tile or close any application. You can customize WideAngle to the way you work. Distribute applications in workspaces according to your own workflow. Create groups of programs to automatically launch. Select applications, like E-mail or utilities, you want to appear in every active workspace. The choices are yours. If you depend on DOS, WideAngle 2.0 makes moving to Windows easy. For more information, call **1-800-736-4198.**



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Attitash Software, Inc., 20 Trafalgar Square, Nashua, NH 03063

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Circle 73 on reader service card

Compaq Goes Modular

Finally, Compaq quality and an upgrade path too.

Compaq's new line of computers, the Deskpro/M family, offers a CPU upgrade path—and a money-back upgrade policy when you install a faster CPU.

LUIS DELGADO

Michael Goodwin

As faster and more powerful processors emerge monthly from the chip vendors, many users are refusing to buy a PC unless it's upgradable. Who wants to spend thousands of dollars on a system with last year's CPU that may be unable to run next year's hot software? More and more PC manufacturers are responding with systems that let you pull out your old processor and replace it with the latest speed demon—for much less than it would cost to replace the entire system.

Until now, the legions of loyal Compaq customers have been denied this option—but with the arrival of the Deskpro/M family, all that has changed.

The family comprises four midsized machines: a 25-MHz 386DX (the 386/25M), two systems based on the new 486SX chip (the 16-MHz 486s/16M and the 25-MHz 486s/25M), and at the high end a 33-MHz 486DX (the 486/33M). All four systems come with the CPU and 4MB of RAM on a removable processor board. That means if the low-cost 16-MHz 486SX meets your business needs today, you can buy it knowing that if your needs change, you can pull out the CPU board and drop in another one with a powerhouse 33-MHz 486. Compaq will even buy back the old board.

The 386-based box incorporates Compaq's four-way set associative memory caching to provide the high performance for which Compaq is famous. For the 486-based systems, Compaq engineers chose to rely on the chip's built-in 8K cache. Additionally, all the Deskpro/M systems provide two other special pullout boards: a CPU-speed-memory board that holds up to 60MB of industry-standard RAM chips, and a board that holds the ROM and BIOS chips, the I/O ports, and the clock/battery. Anyone who's ever had to pull out five expansion boards, two drive cages, and the power supply to reach and replace the BIOS or the battery will instantly appreciate the convenience of this latter pullout. All three plug-and-play system boards—CPU, memory, BIOS—go in dedicated slots.

After several years during which most vendors have been placing a VGA graphics chip on the motherboard, users are finding that to keep up with changing standards, a plug-in video expansion board is actually preferable. Compaq follows this line of thinking by putting its Advanced VGA on an EISA expansion board that takes up one of the five EISA slots—leaving four free. Advanced VGA delivers 16 colors at 800 by 600 resolution, as well as 256 colors at 640 by 480, and includes a proprietary graphics accelerator chip designed to speed up applications such as *Windows* by as much as 25 percent. There are three externally accessible drive bays, with room inside for a hard drive as well.

All the systems are available in a variety of configurations, with hard drives ranging in size from 60MB to 340MB. While the units won't set the world on fire, they are hot news for loyal Compaq shoppers who no longer need to go to strangers to go modular. Compaq's new systems also give a wider choice to those who think the time of the disposable computer is past.

Michael Goodwin is an associate editor for PC World.

SNAPSHOT

Deskpro/M Family

Now it's everyone's prerogative to change his or her mind. Compaq lets you buy now, upgrade later.

KEY FEATURES

- **CPU upgrade via processor board exchange**
- **Money-back upgrade policy**
- **4MB RAM standard**

AVAILABILITY

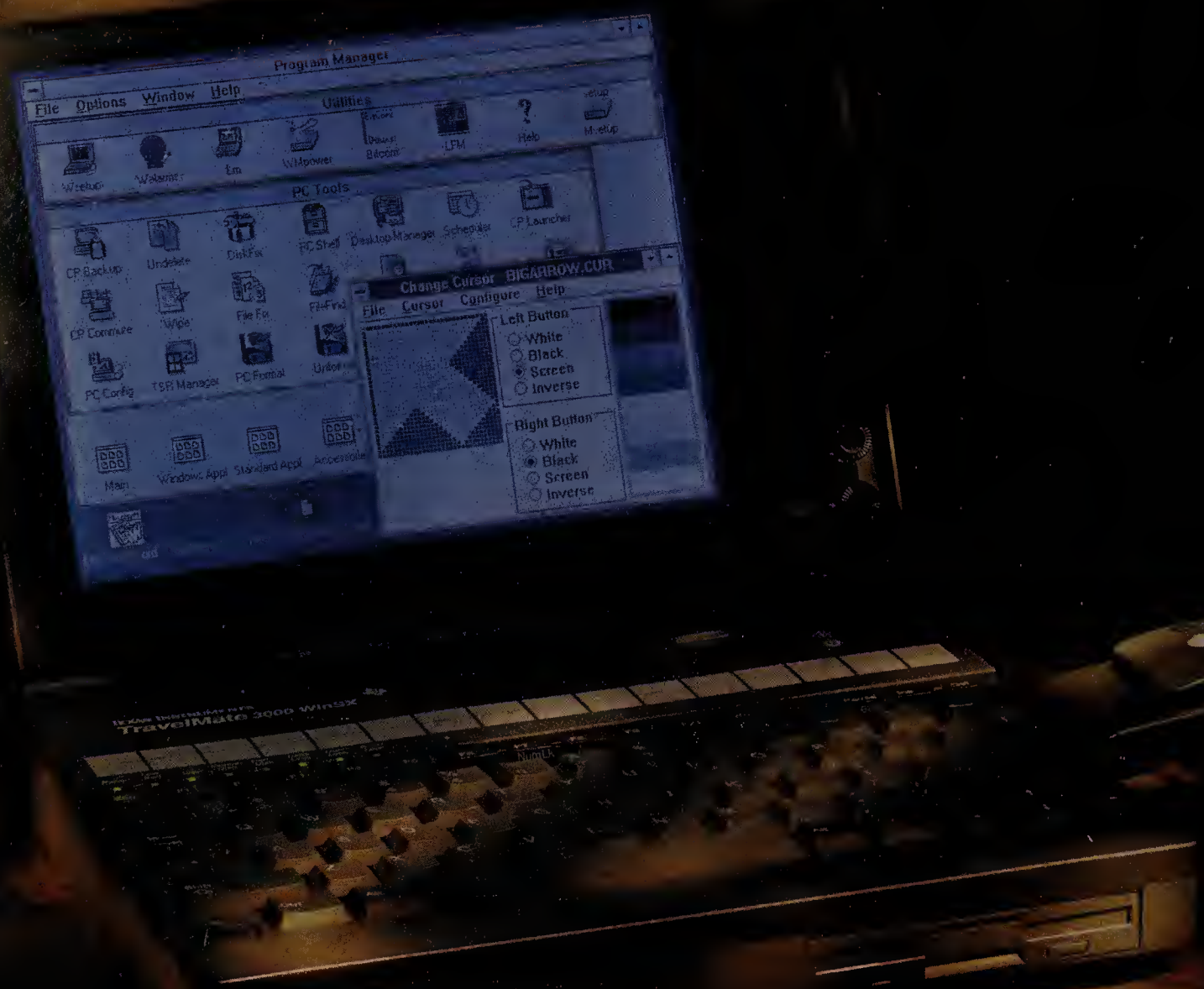
Immediate

PRICING

386/25M Model 60 $3599,
486s/16M Model 60 $3699,
486s/25M Model 60 $4199,
486/33M Model 120 $5699

Compaq Computer Corp.
P.O. Box 692000
Houston, TX 77269-2000
800/231-0900

Reader service no. 709



Introducing the first notebook computer designed to make Windows™ a breeze.

Just turn it on and go. It's that simple. The new TI TravelMate™ 3000 WinSX™ package is engineered to meet the challenges of running Windows on a notebook computer. That's why it comes with MS-Windows® 3.0 and MS-DOS® 5.0 already installed on the 60MB hard drive. So within seconds, you're into Windows and ready to load your application software.

But the TM3000 WinSX offers so much more. Like clicking in and out of applications with a specially designed pointing device. An extra-large, easy-to-see cursor that keeps your place as you move from screen to screen.

And Battery Pro™. Designed to extend battery life when working in Windows, it suspends functions you're not using while keeping calendars and other background programs current. So you can pick up where you left off.

Best of all, these Windows features, and more yet, come in the industry's smallest, thinnest and lightest 386SX™ 20 MHz notebook computer.

Finding out more is a breeze, too. For the name of a dealer near you, call **1-800-527-3500.**

TEXAS INSTRUMENTS

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Circle 263 on reader service card

AST Notebook Breaks the Rules

The Premium Exec 386SX/25 shatters the speed barrier with AMD's hot new 25-MHz chip—at a killer price.

The Premium Exec 386SX/25's 25-MHz speed and power savings put it ahead of its class.

Mike Hogan

Sometimes you have to break with convention to create something better. Unlike other large PC vendors, which stick with Intel chips for fear of losing a regular supply, AST has boldly incorporated a 386-compatible CPU from AMD in its latest notebook PC. The result? The fastest and most power-stingy notebook you can buy from a major supplier.

AST's Premium Exec 386SX/25 signals a new era of competition among chip makers that's sure to bring users more choice and lower prices. The Exec's price was still in flux at press time, but you should be able to buy the 60MB model for under $3800.

This is pure power in an 8½-by-11-inch box. The AMD chip gives the Exec a 25 percent advantage over the 20-MHz choices that dominate the bench-press class. You get 4MB of memory (expandable to 8MB) and an 80MB hard drive option.

If you need to pack a big spreadsheet, data base, CAD program, or *Windows* presentation, the Exec 386SX/25 is your machine. If you just want to do word processing and an occasional spreadsheet, the 20-MHz 40MB-equipped Exec 386SX/20 is being repriced to $3000.

No Battery Life Trade-Off

The Exec 386SX/25 should give you as much battery life as its slower predecessor because the AMD Am386-SXL-25 CPU is a static processor that can shut down completely—to 0 MHz—between keystrokes. It doesn't even use the small amount of power the Intel 386SL needs.

How much life you get from the Exec's nickel-cadmium battery depends on your application's use of the hard drive and your use of display backlighting. During normal word processing with a bright backlight but little hard drive activity, the Exec ran more than 4½ hours. Even during tests that visited the hard drive every minute, it ran more than 3½ hours. Such stamina is far beyond what's delivered by the current crop of similarly configured 20-MHz 386SXs.

The Exec 386SX/25 incorporates AST's auto-resume technology to let you stretch battery life over longer periods of intermittent use. Just close the lid to take a break; you can return instantly to where you left off without rebooting. Assuming normal interruptions, you can easily manage a full day of usage.

Additionally, the Exec 386SX/25 features a 1.44MB floppy and a paper-white VGA display with a respectable 32 shades of gray on an average-sized 8.5-inch diagonal screen. You also get a very nice 82-key AT-style keyboard.

This is not the be-all-end-all notebook. At 2.25 inches, it's a little tall and, at 7 pounds, a little heavy. AST still clings to its 1-pound AC adapter. The Exec suffers by comparison to a next-generation design like Toshiba's T2200SX, which is 1.6 inches high and weighs 5.5 pounds. But the slower Toshiba is $4495.

Instead, the Exec 386-SX/25 delivers notebook convenience and desktop punch at a killer price. Compaq and Toshiba will have to produce similarly striking machines or be run over by this hard-charging competitor.

Mike Hogan is PC World's *news editor.*

SNAPSHOT

Premium Exec 386SX/25

KEY FEATURES

- **25 percent faster CPU than 20-MHz notebooks**
- **4MB RAM standard**
- **Choice of 60MB or 80MB hard drive**
- **32 shades of gray on paper-white VGA display**

AVAILABILITY

Immediate

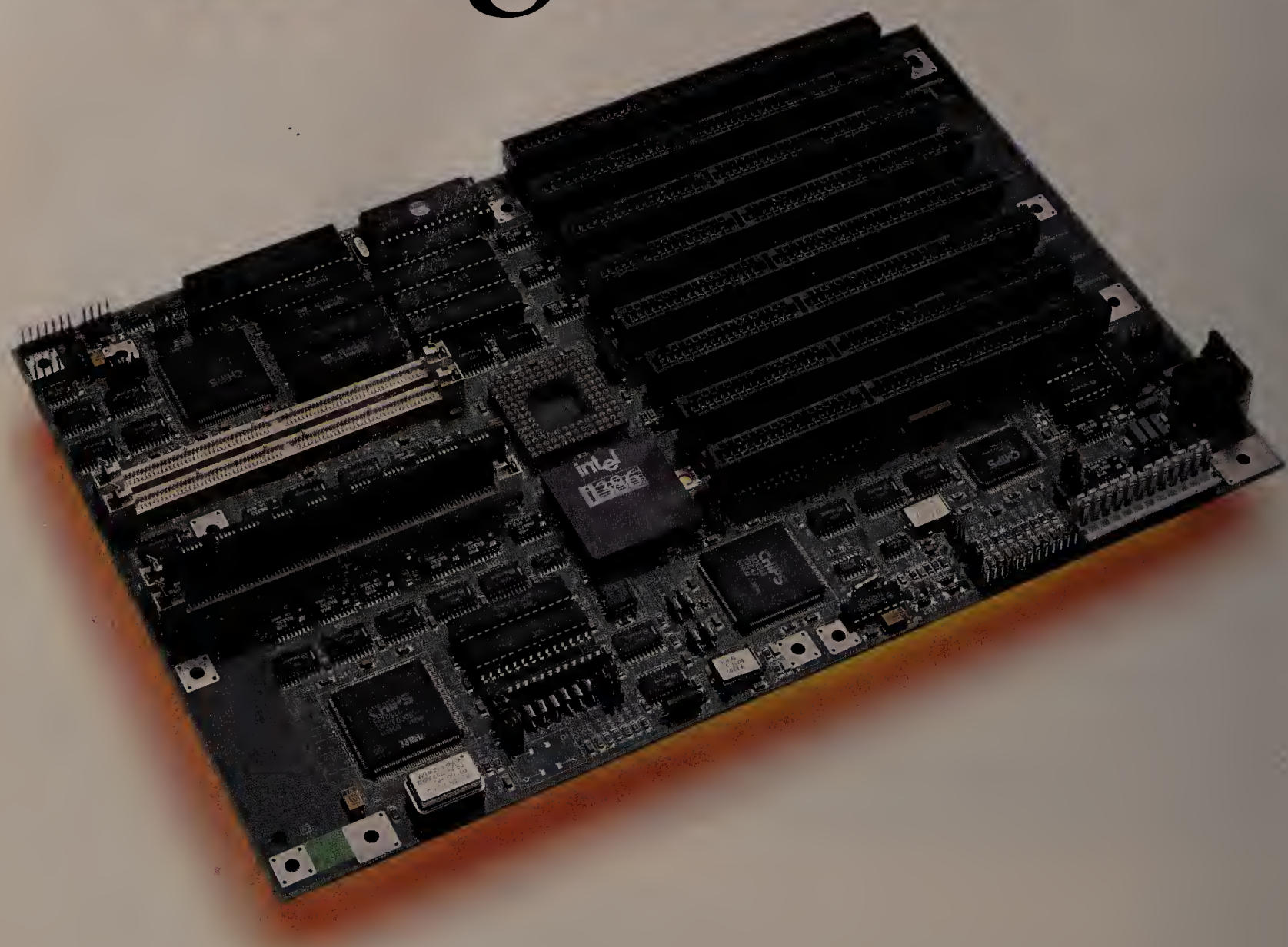
PRICING

Model 63V with 4MB RAM and 60MB hard drive under $3800; Model 83V with 4MB RAM and 80MB hard drive under $4100; 4MB RAM $995

AST Research, Inc.
16215 Alton Pkwy.
P.O. Box 19658
Irvine, CA 92713-9658
800/876-4278,
714/727-9355 (fax)

Reader service no. 710

SmörgåsBoard!



INTRODUCING THE 386N SERIES—
STARTS FROM $895: Feast your eyes on the new 386N MotherBoard from Hauppauge. Our 32-bit 25 and 33MHz 386DX boards boast the latest in VLSI technology. You'll find everything you need on board, including SIMM memory expandable from 1MByte to 32MBytes; static RAM cache up to 256K; serial and parallel I/O ports; floppy and IDE disk controllers and much more. Choose your own VGA to complete "the Mother of all MotherBoards!"

intel inside

FLEXIBILITY: The "N" in 386N stands for *New* and *Next* generation. Developed with the new super I/O chipset, our boards are designed to exploit the next generation of SIMM modules to bring on-board memory expansion to *128MBytes!* The N series also features Intelligent BIOS,™ making it easy for you to install a variety of new I/O cards. What's more, Intelligent BIOS supports future generation IDE disk drives. Simply add components as you see fit!

PERFORMANCE: Thanks to high-speed static RAM cache—from 0 to 256K—you can automatically make CAD, database and networking programs really *cook.* The more cache, the faster your programs go. (Regarding compatibility, if you assume it's excellent, you're right.)

RELIABILITY: Built to Hauppauge's exacting quality standards, the 386N boards are available in AT and XT sizes to work with your Tower, Minitower, Desktop or Workstation chassis. All boards are made in the USA and backed by a 1-year warranty.

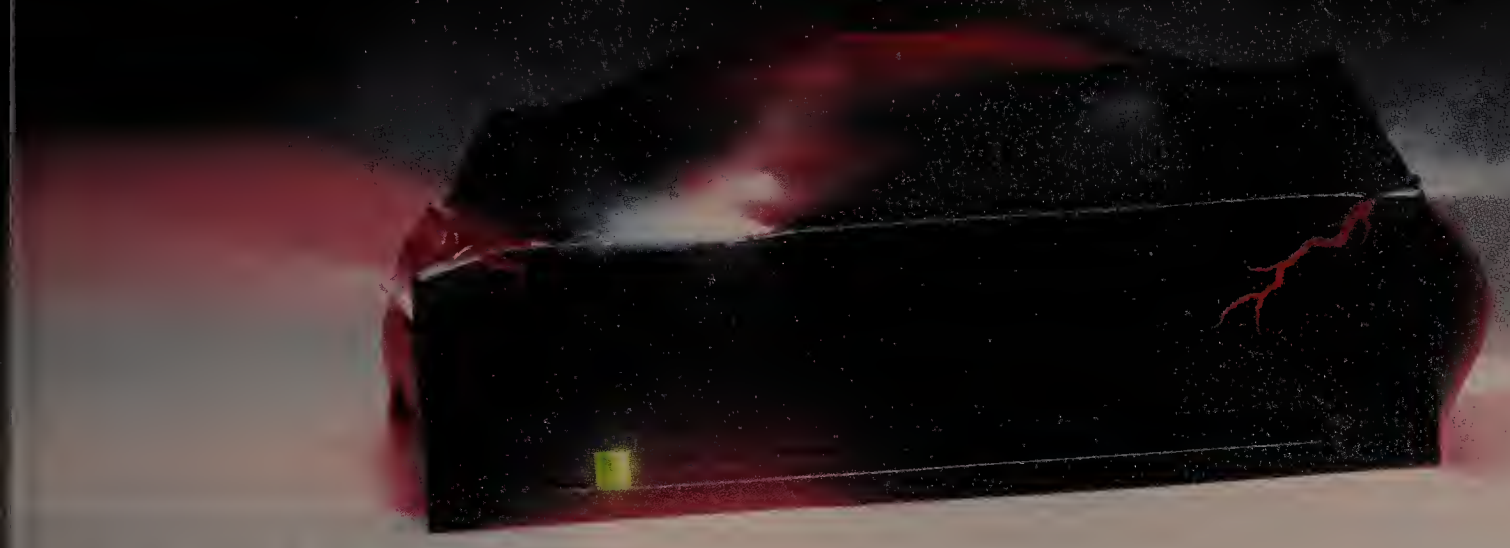
If you're power hungry, we've got dinner. Our new 386N series combines performance, flexibility and low cost to help you configure the most successful systems on the market. For more on our boards, fileservers and workstations, call: **1-800-443-6284.**

Hauppauge!

Hauppauge Computer Works, Inc.
91 Cabot Court
Hauppauge, New York 11788
In New York: **516-434-1600** In Europe: **(49) 2161-17063**

Circle 131 on reader service card

Need more room on your hard disk?



Doesn't everybody?!!

We all know the way things are going. Bigger, more complex programs that do more and do it easier. More pictures, charts, graphics and color. More things to do with bigger files and more data. More, more, more....

Which all leads to the inevitable. We all could use more disk space.

Increase Disk Space 2-3 Times with Complete Compatibility.

Now you can get rid of the disk space crunch, without even opening your computer. Just install SuperStor, the data compression program for PC/XT/ATs, PS/2s and compatibles that runs on DOS 3.x and 4.x, Windows, DR DOS 5.0 and Compaq 3.31.

SuperStor increases your hard disk capacity, ON-THE-FLY, up to 2-3 times! And it works on floppies, Bernoullis, and removable hard drives, too!

SuperStor is easy to install, safe, and reliable. We feature a 100% transparent, bootable C drive. And it's the ***fastest compression solution available!***

Once SuperStor is on your hard disk, no further steps are needed. You'll instantly gain up to three times more disk space. For your copy of SuperStor, contact your local dealer or call AddStor at

1-800-732-3133 for the dealer nearest you.

addstor

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Menlo Park, CA 94025
Fax: 415-688-0466

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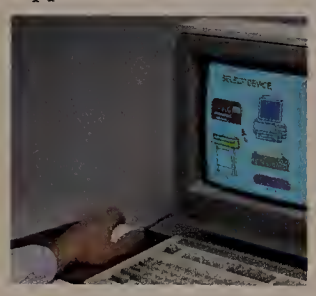
Circle 2 on reader service card

LASERNET®

The Sharing Family With Peripheral Vision

Only Western Telematic's LASERNET sharing devices have true peripheral vision — the widest family of products to meet the needs of today's data sharing requirements. Whether it's a simple sharing set-up or a complex network — LASERNET has a device to fit your need and budget.

Western Telematic has peripheral vision in support software too! LASERNET provides easy-to-use device-select software operable with both Windows™ or MS-DOS® applications.



You won't need glasses to see that LASERNET offers the widest selection and best value for your money. Just take a close look at these LASERNET models and see which one fits your application:

HIGH-LEVEL

Multi-Link™

Serial/parallel device for twelve or more users. Expandable, through dedicated high-speed link, up to 384 any-to-any, user-selctable ports, over 4000 feet. Perform printer/plotter sharing, modem/FAX sharing, PC-to-PC file transfer and more.

- 12 concurrent high-speed ports — 8 serial, 4 parallel
- High-speed link — up to 32 Multi-Link devices — 384 total ports!
- Dynamically allocated, field-expandable SIMM memory — 256 KB to 4 MB
- RJ-11 serial ports for snap-in cabling
- Any-port-to-any-port connectivity
- Any-port designation for printer or plotter
- Each port individually programmable
- Windows or DOS pop-up menu software for instant device selection and status
- Uses standard parallel PC-to-printer cables

12 any-to-any ports; buffered from 256 KB to 4 MB ..... start at $795

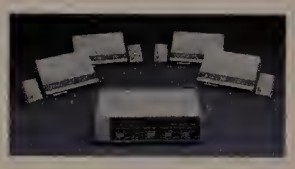
GENERAL

PSU-82C/SP

Programmable sharing units for both serial/parallel printers, plotters and PCs. Designed for CAD/CAE, high-level graphics, Desktop publishing or general applications.

- 4 concurrent serial and 4 parallel inputs (SP)
- 8 concurrent serial inputs (C)
- 1 serial and 1 parallel output
- Expandable buffer memory from 256 KB to 2 MB
- Separate baud rate, flow control, parity and messages for each port
- Pop-up menu software for easy printer/plotter selection
- Easy menu-driven configuration and set-up
- Prompt and response messages for plotter applications
- Support all laser printers including PostScript® printers and all types of plotters.

8 inputs; 2 outputs; buffered from 256 KB to 2 MB ..... start at $595

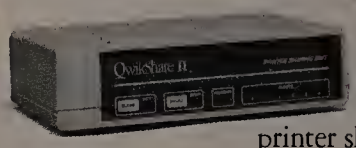


QwikShare® III

Low-cost, expandable, all-parallel, high-speed printer sharing system. From one to 32 PCs independently share up to three remote and one local parallel laser/dot-matrix printer or plotter.

- Expandable to 32 PCs by adding Expansion Modules
- Memory expandable up to 4 MB
- Printer Select Switch — no software or TSR program required
- All parallel port connections — PCs, printers and plotters
- Maximum network distance — 4000 feet
- Quick and easy installation using snap-in, RJ-11 cable & standard parallel cables

Printer Server; buffered from 256 KB to 4 MB ..... start at $295
Expansion Module with Printer Select Switch ..... $149 ea.



QwikShare® II

Low-cost, buffered printer sharing. Supplied with Windows and MS-DOS device-select software which provides pop-up menus for easy printer port selection.

- 6 RS-232 serial inputs - RJ-11 connectors
- 2 user-selectable laser/dot-matrix printer ports
- Expandable memory to 2MB using SIMMS
- Input speeds up to 115K baud

6 inputs; 2 outputs; buffered from 256 KB to 2 MB ..... start at $295

BASIC

QwikShare®

Complete, plug-n-go, "no-wait" sharing system. Up to six IBM PCs or compatibles can share a serial laser/dot-matrix printer or plotter. Each system contains: sharing unit; super-fast spooling software; three — 9- and 25-pin connectors; four —25 ft. PC cables; one —5 ft. printer cable & connector. Compatible with most popular graphics, word processing and spreadsheet software including Microsoft® Windows™.

6 inputs; 1 output; $195

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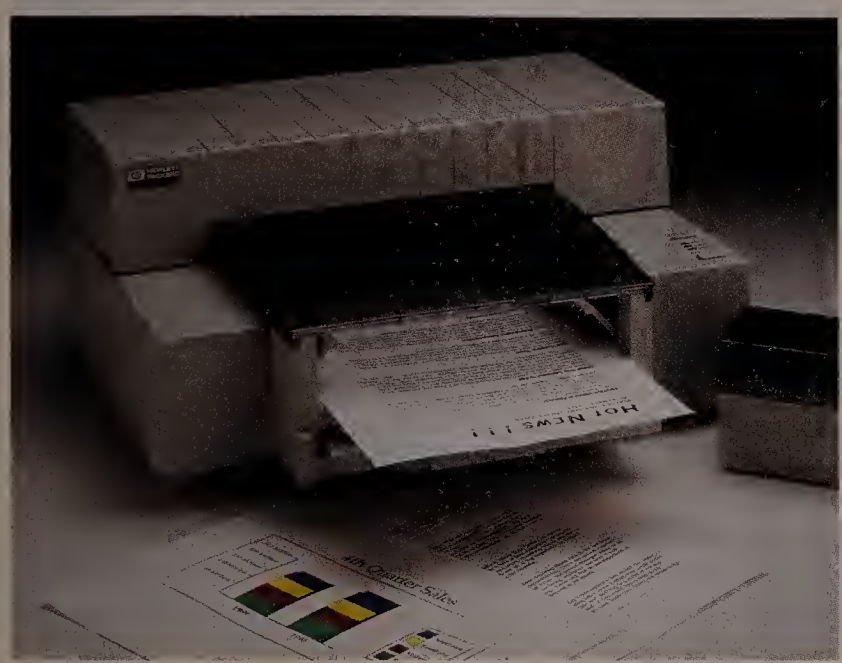
Circle 325 on reader service card

PRODUCT OUTLOOK

Edited by MIKE HOGAN

HP DeskJet 500C

A Color Printer for the Masses—Under $1000 on the Street



The DeskJet 500C ink jet delivers volume monochrome printing and occasional color printing on plain paper at 300-dpi resolution.

Okay, let's see a show of hands: How many of you still use a monochrome monitor? I see. Then why are you still printing out your documents in plain old black-and-white?

For years, color printers have been so pricey that only graphic artists or presentation-oriented work groups used them. Users with an occasional need for color printing could only dream of producing the vivid colors and laser-quality text that art departments achieved. But Hewlett-Packard has broken the $1000 price barrier with a color ink jet workhorse that could make those printing dreams come true.

The DeskJet 500C gives you millions of colors, plain-paper capability, and 300-dpi resolution at a $1095 list price that's certain to come in under $900 on the street. It's the first practical way to add color charts, illustrations, and scanned images to everyday reports, newsletters, and presentations. Unlike HP's 180-dpi PaintJet, the DJ 500C also offers the higher resolution that business users need.

The DJ 500C uses separate print cartridges for monochrome and color (cyan, magenta, and yellow). Plug in the monochrome cartridge to print text-only documents, then replace it with the CMY when you need color graphics. Because research has shown that users typically print color pages only about 20 percent of the time, interchangeable cartridges bring big dollar savings in supplies.

The downside comes when you want to print color graphics and text on the same page. The CMY cartridge mixes blue and red to create a composite black. This process results in not-quite-black lines that can disappear against dark blue backgrounds. Text on a color page suffers, but not too badly. The unit chugs along at a respectable 3 pages per minute in monochrome, but color pages dribble out at about 4 minutes apiece.

The printer comes with three dot matrix-like typefaces and will accept existing DeskJet font cartridges. A special driver gives *Windows* users access to four more scalable fonts—Courier, Univers, Symbol, and CG Times. Drivers for *Windows* and major DOS applications like *Harvard Graphics, 1-2-3,* and *Quattro Pro* will ship with the printer.

Ink cartridges cost $31.95 for high-capacity black and $34.95 for CMY—about 4 cents per page for monochrome and 12 cents for color. The compact, 14-pound box offers the same 8-by-15-by-17-inch footprint as the DeskJet 500, with a 100-sheet cut-paper feeder for letter, legal, and envelopes.

DeskJet 500 owners who hunger for color can upgrade to the 500C for $450 (if you own an earlier DeskJet model, the upgrade will cost you $550). HP will continue to sell the monochrome DeskJet 500 for $729 and the PaintJet at a reduced price of $995.

—*Daniel Tynan*

IN BRIEF

HP DeskJet 500C
Finally, a 300-dpi color printer you can afford. The DeskJet 500C offers sharp text and vivid color on plain paper for only $1095.
Hewlett-Packard
19310 Pruneridge Ave.
Cupertino, CA 95014
800/752-0900
Reader service no. 681

INSIDE PRODUCT OUTLOOK

113 **HP DeskJet 500C**
An affordable 300-dpi printer that offers sharp text and vivid color on plain paper.

114 **Access to Platinum**
DOS or *Windows* accounting with easy upgrade path.

116 **Microsoft Publisher**
Aggressively priced desktop publisher targets beginners but includes many advanced features.

116 **Microsoft Money for Windows** Single-entry accounting system helps organize personal finances graphically.

126 **TypeAlign, AllType Typeface Converter**
Revives existing font libraries with on-the-fly font scaling and sophisticated text effects.

126 **HeadStart SX-20 CD**
Windows-capable personal workstation provides easy upgrade path to multimedia through CD ROM player.

128 **Iomega Bernoulli 90s, SyQuest SyDOS 88s**
Large-capacity removable disks give you up to 180MB of storage space.

128 **Works for Windows**
An intuitive software suite gives *Windows* users the works—for only $199.

130 **AVR 3000/CL Plus, Microtek ScanMaker 600Z, Umax UC630**
Today's flatbed scanners combine color with high resolution at reduced prices.

T2200SX, T2000SXe

New Toshiba Notebooks Slim Down

Toshiba has kept up with the portable PC powers by consistently offering the broadest selections. Now it's moving ahead with two new notebook models, one of which weighs a scant 5½ pounds—6½ pounds with AC adapter.

Unlike some recently debuted sub-6-pound notebooks, Toshiba's T2200SX doesn't force you to sacrifice its 1.44MB floppy or a quality keyboard or top-end display to get down to 5½ pounds. At 9½ inches diagonally, the T2200SX's 16-shade VGA display is even larger than the 8½-inch display on its 6.9-pound cousin, the T2000SXe. It's thinner too, so the T2200SX not only has an 8½-by-11-inch footprint, but also a very slim profile of 1.6 inches.

Both Toshibas have full-sized, full-travel keyboards. The 12.2-by-10-by-1.9-inch T2000SXe has 86 keys, including a full complement of non-aliased function keys, page keys, and inverted-T cursor keys. Toshiba is able to comfortably fit a near-identical 82-key keyboard into the T2200SX by shaving a little unnecessary plastic from the sides of a tough carbon-fiber case, paring a bit off the side control keys, and losing a few duplicate keys. Your fingers won't know the difference.

Both machines offer a 60MB hard drive and are powered by a 20-MHz 386SX processor backed up by 2MB of RAM expandable to 10MB via RAM cards. Toshiba's unique nickel-hydride battery lets both machines make weight and still get more than 3 hours of continuous battery life with hard disk and display running full out. Under more typical conditions—taking advantage of Toshiba's built-in power management—you can push it toward 4 hours.

Both notebooks are equipped with an Auto-Resume feature that lets you power down to near zero for as long as 100 hours. When you come back, you can immediately return to the same spot in your application without rebooting. Also, power management is overridden by the 8-ounce AC adapter (which takes 3 hours for a recharge) so you won't have your hard drive shutting down when powered from the wall socket.

Toshiba's new Desk Station IV lets you turn these notebooks into true desktops with its AC power, a 5¼-inch drive bay for two external devices, two 16-bit slots, and parallel, serial, PS/2 mouse, keyboard, external floppy drive, and RGB monitor ports. Either portable slides into the Desk Station IV's 150-pin connector and you can snap on a full-size monitor stand.

The T2200SX retails for $4799 with a 60MB hard drive and $4499 with 40MB; a comparably configured T2000SXe is $4499 and $4199, respectively. Desk Station IV sells for $999. —*Mike Hogan*

Toshiba's T2200SX fits a 9½-inch VGA display and a 60MB hard drive into a 5½-pound notebook only 1.6 inches high.

IN BRIEF

T2200SX, T2000SXe
Toshiba offers long battery life and quality keyboards in this pair. The T2200SX is one of the lightest full-function notebooks on the market.

Toshiba America Information Systems
9740 Irvine Blvd.
Irvine, CA 92713
800/334-3445
Reader service no. 683

Access to Platinum

Access to High-End Accounting from DOS or Windows

Are you unhappy with your current accounting program? Have you been thinking of moving up to one of the high-end packages? Advanced Business MicroSystems (ABM), developers of the high-end *Platinum* accounting series (marketed exclusively by IBM), has an enticing trial proposition. Through year-end, users of any other accounting package can buy for $79 the DOS or *Windows* version of ABM's *Access to Platinum*, a $249 small-business accounting package with ties to its more robust sibling.

As the name implies, either version offers an easy upgrade path to the company's high-end accounting series. A conversion utility transfers all accounting data to the *Platinum Series*, eliminating the need to rekey data should your company's accounting needs change.

The *Windows* and DOS versions of *Access to Platinum* have virtually identical feature sets, including general ledger, checkbook, accounts payable and receivable, inventory, job costing and time billing, and payroll modules. *Access to Platinum* goes one step beyond most (but not all) *Windows 3.0* accounting packages by offering a true Multiple Document Interface (MDI), which lets you open several forms and move easily among them. —*Roberta Furger*

IN BRIEF

Access to Platinum
WINDOWS Entry-level Windows and DOS accounting packages can put small businesses on a smooth upgrade path.

Platinum Desktop Software
15615 Alton Pkwy., #300
Irvine, CA 92718
800/999-1891,
714/727-1255 (fax)
Reader service no. 702

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Mail to: SYSTEMS COMPATIBILITY CORPORATION 401 N. Wabash, Suite 600, Chicago, IL 60611

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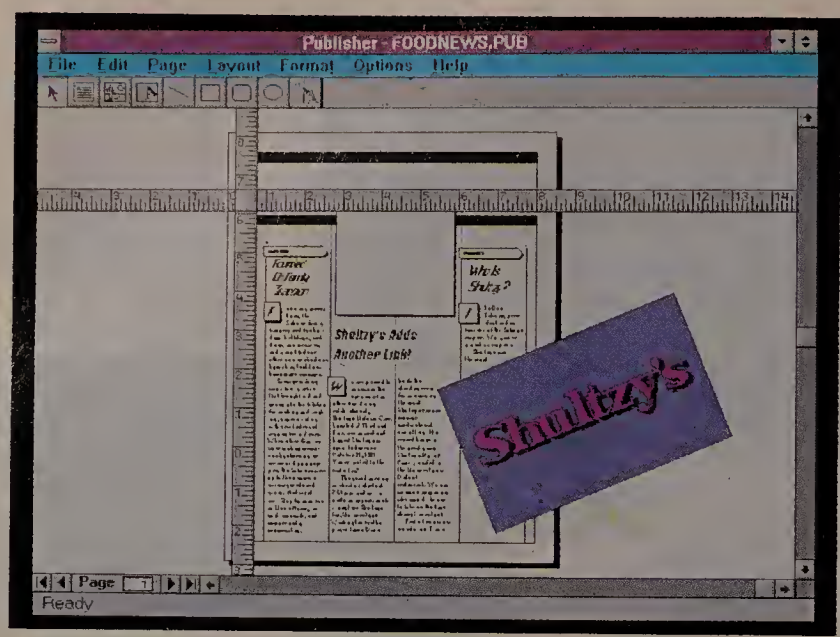
Microsoft Publisher

Minimizing the Learning Curve, Maximizing the Fun



Microsoft Publisher brings innovations to desktop publishing, such as templates that lead you through the process of page layout.

Coming in on the tail end of the desktop publishing revolution, Microsoft is delivering a beginner's publisher that is both aggressively priced and sports many advanced features. Better yet, it provides templates and routines to help busy novices get up and running fast.

Publisher's slickest feature is its layout templates. When creating a new document, you can either select "blank page" and start from scratch or you can choose from any of five routines—Newsletter, Business forms, Calendar, Table form, and Invitation—that step you through the creation of a semi-customized page. Click on Newsletter, and you'll be asked whether you want a "classic," "modern," or "jazzy" design. Next you'll be asked to select the number of columns for the layout (63 is the maximum.) Whatever choices you make are immediately displayed on a dummy page, so you're able to get an idea of what you're selecting. Other routines help you create tables, calendars, letters, coupons, and titles—and developers can write their own.

Like Aldus' *PageMaker*, *Microsoft Publisher* provides a pasteboard for storing text and graphics before placing them in *Ventura*-like frames. You can link text between frames, automatically wrap text around objects, and create new pages. There's even a spelling checker, multiple levels of zoom, and the ability to adjust letter and line spacing. For good measure, *Publisher* includes Bitstream's *Facelift* scalable soft font manager and a clip-art library of more than 100 images. *Publisher* also makes it easy to generate a variety of borders for images and lets you rotate and otherwise modify text.

There are a few things missing from *Publisher*. Although the program provides 20 layout templates, it doesn't offer style sheets for text formatting. Although you can select from several levels of zoom, *Publisher* won't let you view two facing pages at the same time. *Publisher* also lacks popular high-end features like kerning tables, frame anchoring, automatic numbering of illustrations, table of contents, and index generation, and the high-powered publishing tools you'll find in products such as *Ventura Publisher* and *PageMaker*.

At $199, *Microsoft Publisher* isn't aimed at power users but rather at those who have small-scale publishing projects who want expenses and learning time kept to a minimum.

—*Patrick Marshall*

IN BRIEF

Microsoft Publisher
WINDOWS An easy-to-use and surprisingly powerful low-end Windows desktop publisher with many advanced core features.
Microsoft Corp.
One Microsoft Way
Redmond, WA
98052-6399
800/426-9400
Reader service no. 686

Microsoft Money for Windows

Cash in on Money

If you've already bought into the concept of *Windows* Nirvana, Microsoft wants to help bring a little balance to another aspect of your life—finances. Like Intuit's DOS-based *Quicken*, *Money for Windows* is a one-write ("checkbook") accounting system for individuals and small businesses.

Money takes a graphical approach to tracking your income and expenditures. You write a check or make a deposit by filling in a familiar, on-screen representation. Data entry is made easy by *Money*'s search skills, which bring up a register of previous entries (and amounts) as you begin typing the first letters in an account's name.

Like *Quicken*, *Money* has a pop-up reminder to let you know the due date for recurring monthly bills. You also get a modifiable list of income and expense categories. You can apportion the appropriate percentage of a single transaction to different accounts—the portion of a deposit from rental income or the deductible portion of your home mortgage payment.

Balancing your checkbook is easier—if an error exists, *Money* helps you find it by displaying likely discrepancies. If you want to double-check your numbers, you can pop up a calculator.

This $69.95 program lets you keep as many types of accounts as you want—with an asset account, you can track investments like stocks, bonds, and rental property. Or you can add your personal property in order to determine your net worth for insurance purposes. You'll also be able to generate reports—budgets, summaries, income and expenses, taxes, and more—and customize them for a variety of views. —*Steve Bass*

IN BRIEF

Money for Windows
WINDOWS Now you can balance your checkbook and reconcile different accounts from within the comfort of Windows.
Microsoft Corp.
One Microsoft Way
Redmond, WA
98052-6399
800/426-9400
Reader service no. 688

LaserScript Fax

PostScript Printing and Legible Fax—Why Settle for Less?

Considering how cheap and popular laser printers and fax boards have become, why are we still receiving curly, low-resolution faxes over fax machines when the near-identical laser technology provides crisp documents on plain paper?

Abaton offers an economical answer. Its $3295 LaserScript Fax is a 6-ppm laser/fax combo that provides PostScript printing with 35 scalable Bitstream and 24 bitmapped fonts plus fax from within *Windows*.

When receiving a fax, you'll get nice, 300-dpi output because the LaserScript Fax rasterizes the usual 200-dpi Group III faxes at 300 dpi. Conversely, it does a good job of translating your 300-dpi PostScript originals into 200-dpi fax format. Either way, documents look clearer.

Everex's fax control software runs as a *Windows* program, letting you send faxes from within *Windows* or DOS applications running under *Windows*. Whenever you select the print option from your application, the fax software will pop up a dialog box that also gives you the option of faxing the document—it simply redirects your PostScript output to fax. If you need to dash off a fax while inside a spreadsheet, and you don't want to open your word processor to do it, just summon the fax memo form, create your note, and fax it. You can include a custom cover page with your corporate logo and build, edit, sort, and search a custom data base of fax numbers.

The LaserScript can receive faxes without being hooked up to a PC. Because it lacks a built-in scanner, you'll need to buy a scanner to send non-computer-generated faxes. Unlike with a fax card, you can't save faxes as files for later printing. Still, you can use 3MB of the standard 4MB of printer memory (expandable to 6MB) as a fax buffer—enough to print approximately 30 pages.

The low-priced LaserScript Fax from Everex combines a 6-ppm PostScript laser printer with a plain-paper fax device.

As a PostScript printer, the LaserScript Fax is more than adequate. The 25-MHz National Semiconductor processor has a floating point accelerator and ample RAM lets it move through PostScript or HP PCL 4 jobs quickly. It has two standard HP font cartridge slots and automatically switches between PostScript and PCL 4 emulations without needing escape codes or other intervention. It also automatically senses which of three I/O ports is receiving data and switches to serial, parallel, or RJ-11 modular phone jack as needed. There's a single paper tray that holds 150 sheets of letter, legal, or European-size pages or ten envelopes.

— Mark Henricks

IN BRIEF

LaserScript Fax
WINDOWS Get PostScript printing and plain-paper faxing from the same box.

Everex Systems, Inc.
48431 Milmont Dr.
Fremont, CA 94538
800-628-3837
Reader service no. 691

RightWriter for Windows

Getting It Write

Grammar checkers are like high school English teachers: You either love 'em or hate 'em. *Windows* users who rely on grammar checkers may develop a crush on a new teacher, *RightWriter for Windows*. It works with more than 40 *Windows* and DOS-based word processing programs.

The program doesn't just tap your shoulder when you make an error; nor does it puzzle you with complicated definitions of grammatical terms. Instead, *RightWriter for Windows* marks your document with clear, easy-to-grasp messages and revisions. Want to know if your writing is too lofty? A Summary feature tells you the grade level required to read it, and lets you know if your sentences are too long. Sentence diagram enthusiasts will even find a parser that divides a sentence into its constituent parts.

RightWriter for Windows is very flexible. You can choose your own help level, so instead of having to pore over a long description of a dangling modifier, you can get the quick and dirty version. Can't stand being nudged for using passive voice? Just click on a button from the Style menu to turn off the rule. Frustrated when the check starts all over again if you exit in mid-document? A Bookmark feature lets you start where you left off. If you don't like being bothered with niggling comments throughout the document, you can simply skip the details.

RightWriter also checks any changes you make so you don't enter new errors into the text. If you want to check a file from another *Windows* application at the same time, just paste the file to the clipboard, and *RightWriter* will inspect that, too.

RightWriter for Windows has five predefined writing styles that you can customize further by toggling rules in the Style menu. It also lets you accept or reject changes on a case-by-case or whole-document basis. At $99.95, *RightWriter for Windows* packs plenty of smarts.

—Bronwyn Fryer

IN BRIEF

RightWriter for Windows
WINDOWS A Windows-based grammar checker proofreads documents for punctuation errors, wrong words, grammatical problems, and more.

Que Software
11711 N. College Ave.
Carmel, IN 46032
800/428-5331,
317/573-2655 (fax)
Reader service no. 695

TypeAlign, AllType Typeface Converter

Stretching Your Font Dollars

If ideas are the soul of your document, the fonts you use determine its personality—and sometimes how well the document is received. Adobe Systems and Atech Software have devised some utilities that put more life into your existing fonts and get more life out of them.

Adobe's $99 *TypeAlign* helps stretch your fonts to the limit—literally—to create logos, headlines, and other text effects. Atech's $79.95 *AllType Typeface Converter* lets you join the on-the-fly font-scaling revolution without having to ditch your existing soft font libraries.

Designed to work with *Adobe Type Manager (ATM)*, the *Windows*-based *TypeAlign* lets you stretch, curl, and twist fonts, bend them along a curve, and create other effects. Simply type in text and attach Bézier control handles. You can manipulate text via the handles or specify a path for it to follow, assign colors or gray shades, and adjust letter spacing (kerning). Text remains editable on screen until you export it as an EPS, AI, or WMF document.

Stretch your fonts with Adobe's TypeAlign to create logos, headlines, and other text effects for your documents and presentations.

Atech's *AllType* helps convert font outlines for use with on-the-fly font scalers such as *ATM* and other applications. You can convert between such formats as Adobe Type 1 and Type 3, Bitstream FontWare and Speedo, and URW and Agfa Intellifont.

This menu-driven package helps you identify similarly named fonts and rename them to avoid confusion. You can customize font weight (boldness) and create condensed, expanded, and hollow versions of each font. *AllType* will convert the font's original "hints" (information that enhances the appearance of smaller fonts at low resolutions,) and add hints but quality will vary. For example, outlines that are converted to Type 1 won't necessarily look as good as hand-tuned Type 1 fonts.

TypeAlign requires *ATM 1.0, Windows 3.0,* and 2MB RAM. *AllType Typeface Converter* requires DOS 3.0 or later, 640K RAM, and a hard disk. —*Daniel Tynan*

IN BRIEF

TypeAlign, AllType Typeface Converter
TypeAlign lets you manipulate text without a sophisticated graphics package, while AllType Typeface Converter breathes life into aging font libraries.

Adobe Systems, Inc.
1585 Charleston Rd.
P.O. Box 7900
Mountain View, CA
94039
800/833-6687,
415/961-3769 (fax)
Reader service no. 689

Atech Software
5964 La Place Ct., #125
Carlsbad, CA 92008
800/786-3668,
619/438-6883,
619/438-6898 (fax)
Reader service no. 690

HeadStart SX-20 CD

Fit 'N Finish

Packaged-goods manufacturers learned long ago that consumers have little enthusiasm for reading manuals or assembling hardware. They just want to take the TV or VCR home, plug it in, and get instant gratification.

Setting up the CD ROM-equipped Magnavox HeadStart SX-20 CD takes just a minute or two longer. Plug the cords into their slots, turn on the machine, and you'll find yourself mousing around the jazzy Geoworks *Ensemble* environment. You can crunch numbers in a free copy of *1-2-3* version 2.2 just by inserting the licensing disk into HeadStart's 1.44MB floppy. It's even simpler than previous HeadStart models that automatically installed the software from a CD ROM disk.

But multimedia is the HeadStart's main mission, and at $2099, it commands only a $400 price premium over the CD ROM-less HeadStart SX-20. Philips tosses in most of the good CD ROM software—Microsoft's *Bookshelf, Stat Pack,* and *Small Business Consultant,* as well as *Grolier's Electronic Encyclopedia, PC Globe,* some games, and a pair of stereo headphones.

Beyond that, this is a well-dressed *Windows*-capable workstation with a 20-MHz 386SX processor, 2MB of RAM expandable to 8MB on the motherboard, an 80MB drive in one of five drive bays, three available 16-bit slots, and a built-in Super VGA adapter. A serial mouse, two serial ports, one parallel port, and one Super VGA port are part of the deal, although a copy of *Windows 3.0* isn't. You also choose your own monitor.

You can buy the similarly configured HeadStart 286 CD for only $1399 or the 16-MHz HeadStart SX CD for $1699 and move up when you're ready by adding the 20-MHz CPU via a daughtercard. Price notwithstanding, the HeadStarts are well designed, and they look good too. —*Mike Hogan*

IN BRIEF

HeadStart SX-20 CD
Philips makes it easy for you to get into this *Windows*-capable personal workstation—and eventually into multimedia, thanks to its CD ROM player.

Philips Consumer Electronics Co.
One Philips Dr.
P.O. Box 14810
Knoxville, TN
37914-1810
615/521-4316
Reader service no. 687

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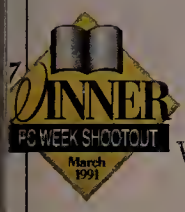

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PC World, June 1991

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New Ventura Publisher 4.0 for Windows.

SPELL CHECK AUTOMATIC TABLE OF CONTENTS WORD FOR WINDOWS FILTER INTEGRATED TABLES AUTOMATIC FOOTNOTES

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Works for Windows

Application Variety Pack for Windows

Whether you need a full toolkit for your laptop's crowded hard disk, or you just want a taste of *Windows* without investing the dollars and time required by full-fledged applications, *Works for Windows* will get you going. The graphical version of Microsoft's DOS-based integrated package, *Works for Windows* includes a word processor, spreadsheet, and data base for just $199.

The easy integration between modules and consistent commands of the character-based DOS version has made *Works* popular with computer novices, executives, and laptop users. *Windows* is simply a better environment—giving you more file import/export options and a way to bring other DOS or *Windows* favorites into the mix.

To import information from another module, you can go through the *Windows* clipboard or just click on Insert and select a chart, spreadsheet, drawing, or a listing. Change your data as you will; *Works* will update it in your charts, spreadsheets, or wherever it is found in *Works*.

Beyond the usual *Windows* conventions, the word processor gives you the same menu as *Word for Windows*. You get access to all the fonts available under *Windows* plus basics like a spelling checker and a thesaurus.

The drawing module gives you all the tools you need to create your own drawings or edit imported ones in PCX, TIFF, BMP, and other popular formats.

Crunch the numbers in a scaled-down version of Microsoft's *Excel* spreadsheet, which even offers some *Excel* extras such as a convenient range summation key. In the chart editor, you can manipulate a chart's color, shape, and background or choose another format from the six chart styles simply by clicking on the gallery option. You can save your files in the most widely used non-*Windows* format, Lotus's *1-2-3*.

In the data base module, you can save up to 32,000 records with as many as 256 fields per record and work on your documents via form, list, and query views. You'll also find routines that step you quite handily through the creation of mailing labels, form letters, and address books using the data base.

Performance is acceptable even on a 286, but make sure you have at least 5MB of hard disk for installation. Whether you're using a laptop or a desktop, this integrated package could be the ultimate tool for you. —*Susan Lusty*

IN BRIEF

Works for Windows
WINDOWS An intuitive software suite for anyone who wants to ease into *Windows 3.0* cheaply and without learning several standalone packages.
Microsoft Corp.
One Microsoft Way
Redmond, WA
98052-6399
800/426-9400
Reader service no. 682

Iomega Bernoulli 90s, SyQuest SyDOS 88s

Storage-To-Go Enters the '90s

Both the Bernoulli 90s (shown here) and SyDOS 88s give you quick access to 90MB or more of on-line storage using their removable disks.

If you're getting cornered by a crowded hard disk, you may want to break out by adding one of the new jumbo removable disks from Iomega or the SyDOS division of SyQuest. Disk capacities are a generous 90MB with the Iomega Bernoulli 90s and 88MB with the SyDOS 88s. And when space runs out on one cartridge, just slide in a new one. Buy a dual drive from either company and you can boost your on-line access to about 180MB.

Compared to early removables, these drives really cook: SyDOS's fixed disk produces a snappy 20-milliseconds average seek time, while the flexible-disk Bernoulli posts a respectable 27 milliseconds. You can also use different disks to run space-hungry programs, or store really big jobs on separate cartridges. These drives also provide read compatibility with their 44MB media.

You can't beat a removable for security. Just pull out the disk and lock it safely away. If your fixed disk fails, you can boot off the removable while you're having your hard disk repaired or replaced.

Each company offers three configurations of their 5¼-inch drives. Iomega features a $1099 half-height internal with a $999 second-drive option, a $1149 single transportable, and a $2249 dual external drive. Unless you already have a SCSI II adapter, you'll need one of Iomega's $265 interface kits, both of which include *Central Point Backup 7.0* and *Super PC-Kwik*.

SyDOS lists its half-height internal kit at $1498, with $1598 for a single external, and $2898 for a dual external. All of SyDOS's prices include the SCSI host adapters and *Super PC-Kwik*. Both vendors include a cartridge with each drive—Iomega charges $687 for a package of three extras; SyDOS packs one with each drive and charges $278 for extra disks. —*Rex Farrance*

IN BRIEF

Iomega Bernoulli 90s, SyQuest SyDOS 88s
These removable disk drives put up to 180MB of storage on line, and if you run short, you can just put in a new disk.
Iomega Corp.
1821 W. 4000 S
Roy, UT 84067
800/456-5522,
801/778-3450 (fax)
Reader service no. 696

SyDOS
6501 Park of Commerce Blvd., #110
Boca Raton, FL 33487
407/998-5400,
407/998-5414 (fax)
Reader service no. 697

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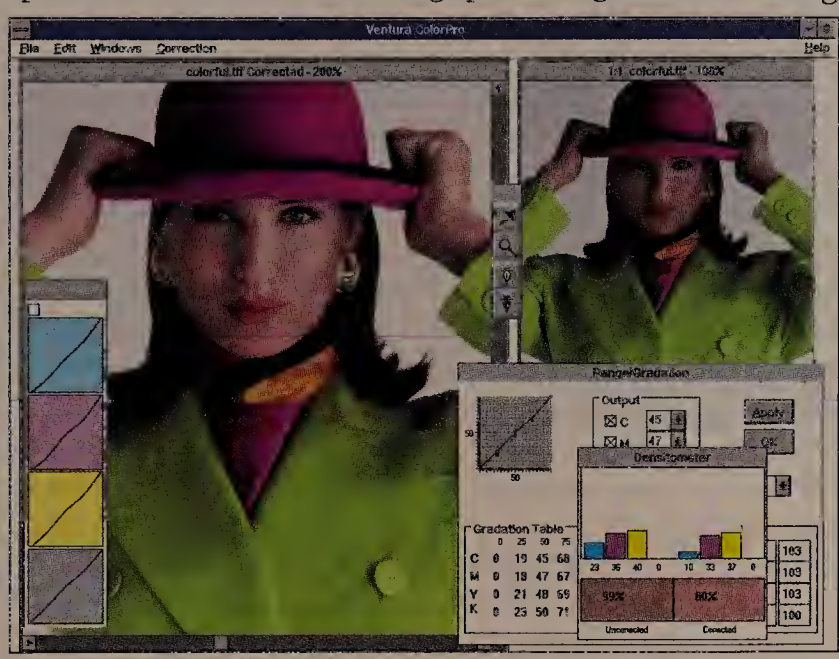

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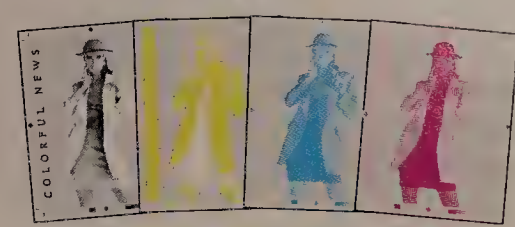

More color for more software.

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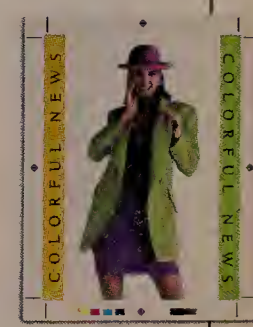

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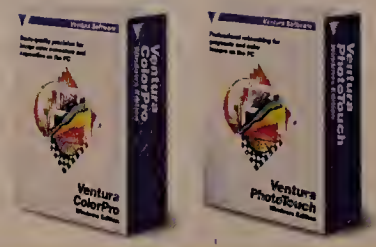

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Frecom Fax96 with Modem, PM2400FX96, The Complete Modem

Fax Plus Modem, on the Cheap

Pick up a fax board these days and it's likely to include a 2400-baud Hayes-compatible modem. Buy a 2400-baud modem and you may well find it atop a 9600-baud send/receive fax board. Manufacturing costs and prices on both technologies are dropping so quickly that you can now get both for the price you used to pay for a fax or modem alone. Frecom, Practical Peripherals, The Complete PC, and Computer Peripherals have all pitched in with fax/modem combinations that sell for budget-coddling prices of $200 to $250.

Frecom has added a 2400-baud modem to its popular Fax96 board to create the $249 Fax96 with Modem. The half-sized board is the only one of this group to include MNP 5 error correction/data compression. This capability could boost throughput to 4800-baud under ideal circumstances (but because it's a software implementation, expect it to run slower than hardware-based MNP 5). The board ships with Tradewind's *Comit* modem software and Frecom's own *Faxography-LQ* fax software.

The PM2400FX96 from low-cost modem maker Practical Peripherals is cheaper still. Costing only $209, this board ships with Smith Micro's *Quicklink II* software, which handles both modem and fax communications and boasts a fax viewer and numerous file conversion options. The PM2400FX96 also comes with a generous five-year warranty. However, the PM2400FX96 and Fax96 make you leave your application to initiate fax transmissions, although you can quickly return while they transmit.

The Complete Modem from leading fax board vendor The Complete PC and ViVa 2496if from Computer Peripherals both have the software to let you send and receive faxes in the background. At $199, The Complete Modem is the most aggressively priced offering of all, while ViVa 2496if is a reasonable $229.

The Complete Modem ships with *Bitcom* communications software and a bundle of full-featured fax software, including Alien's *FAXit* software that allows you to set up a communications window from within *Windows*. The ViVa 2496if comes with Smith Micro's DOS-based *Quick Link II Fax* that lets you send and receive faxes in the background or schedule automatic transmission—even of multiple faxes—to take place at a predetermined later time.

There's no longer any reason to clutter your desk or expansion slots with separate fax and modem devices. With a single low-cost board you're ready for anything your phone line can deliver. —*Eric Brown*

IN BRIEF

Frecom Fax96 with Modem, PM2400FX96, The Complete Modem, ViVa 2496if
These boards give you a 9600-baud send/receive fax and a 2400-baud Hayes-compatible modem for the price of a fax or modem alone.

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Fremont, CA 94539
415/438-5000,
415/490-2315 (fax)
Reader service no. 698

Practical Peripherals
31245 La Baya Dr.
Westlake Village, CA 91362
800/442-4774,
818/706-2474 (fax)
Reader service no. 699

The Complete PC
1983 Concourse Dr.
San Jose, CA 95131
408/434-0145,
408/434-1048 (fax)
Reader service no. 700

Computer Peripherals, Inc.
667 Rancho Conejo Blvd.
Newbury Park, CA 91320
800/854-7600,
805/498-8848 (fax)
Reader service no. 701

AVR 3000/CL Plus, Microtek ScanMaker 600Z, and Umax UC630

Color Scanners You Can Afford

With flatbed scanner prices falling and functionality rising, desktop publications and presentations can look better than ever. Flatbeds are still mostly relegated to graphic artists, but AVR, Microtek, and Umax are trying to increase their appeal to the general business market with low prices on very similar 600-dpi color scanners—the AVR 3000/CL Plus, Microtek ScanMaker 600Z, and Umax UC630.

All can scan 24-bit color via the three-pass method—scanning a whole image through red, blue, then green filters. The AVR is the least expensive at $1860; the Microtek and Umax will cost $1995.

The scanners differ primarily in how they increase effective resolution. AVR boosts the 3000/CL Plus to an effective 600 dpi by linear interpolation. This is a form of software manipulation that scans your image at 300 dpi, then finds places where an image needs to be enhanced and replaces every 4 dots there with 6 dots. Microtek and Umax scan images at 600 dpi vertically and 300 dpi horizontally, and then increase horizontal dpi to 600.

All three contain *Windows 3.0* scan control/image editors. AVR and Umax chose Micrografx's *Picture Publisher* and *Picture Publisher Plus* respectively. Microtek bundles the ScanMaker 600Z with *PhotoStyler* from U-Lead Systems.

AVR, Microtek, and Umax provide top-of-the-line scanning at a reasonable price. But keep in mind that scanning 24-bit color images will require a huge amount of disk storage and that, ultimately, image quality depends on the quality of your output device.

—*Susan Lusty*

IN BRIEF

WINDOWS AVR 3000/CL Plus, Microtek ScanMaker 600Z, Umax UC630
With effective resolution of 600 dpi, these color scanners can improve your line art and halftone images.

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San Jose, CA 95131
408/434-1115,
408/434-0968 (fax)
Reader service no. 692

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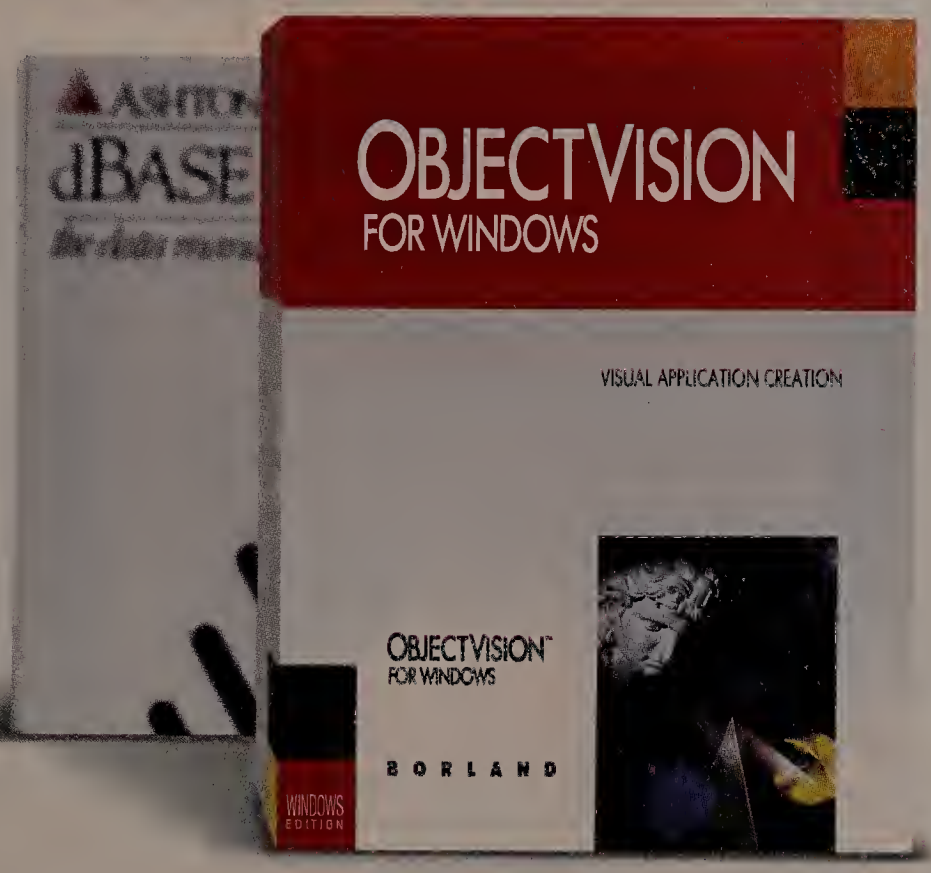
Torrance, CA 90502
800/654-4160 (outside California),
213/321-2121,
213/538-1193 (fax)
Reader service no. 693

Umax Technologies, Inc.
2352 Walsh Ave.
Santa Clara, CA 95051
800/562-0311,
408/982-0776 (fax)
Reader service no. 694

dWindows!

(from Borland)



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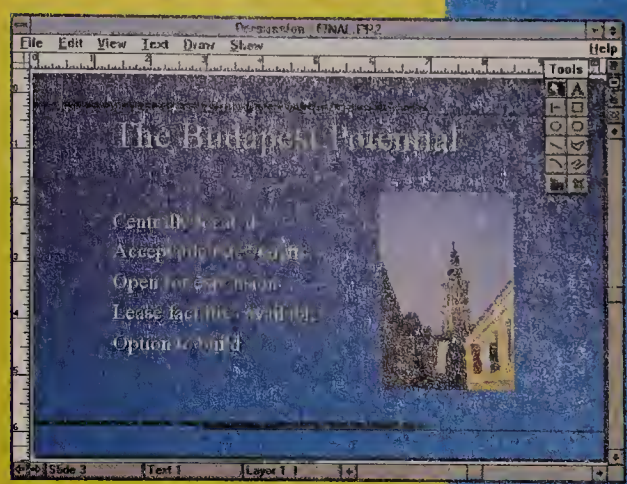

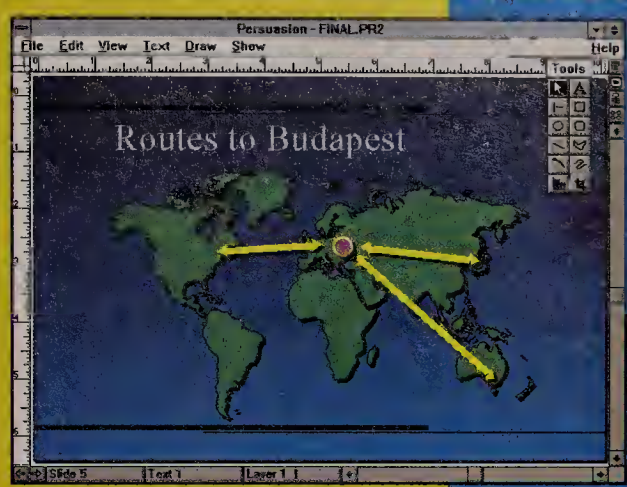

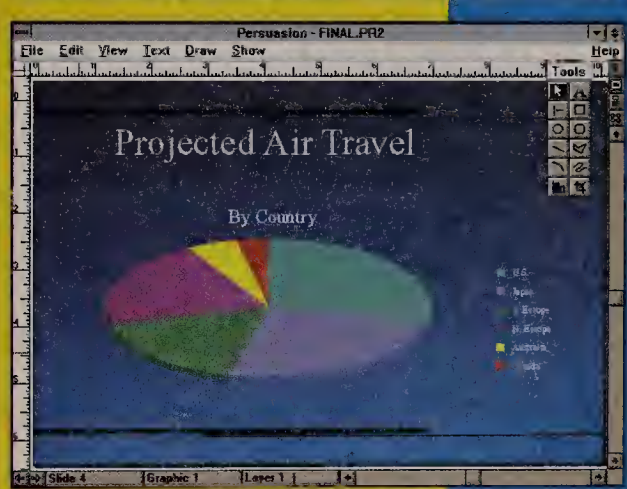

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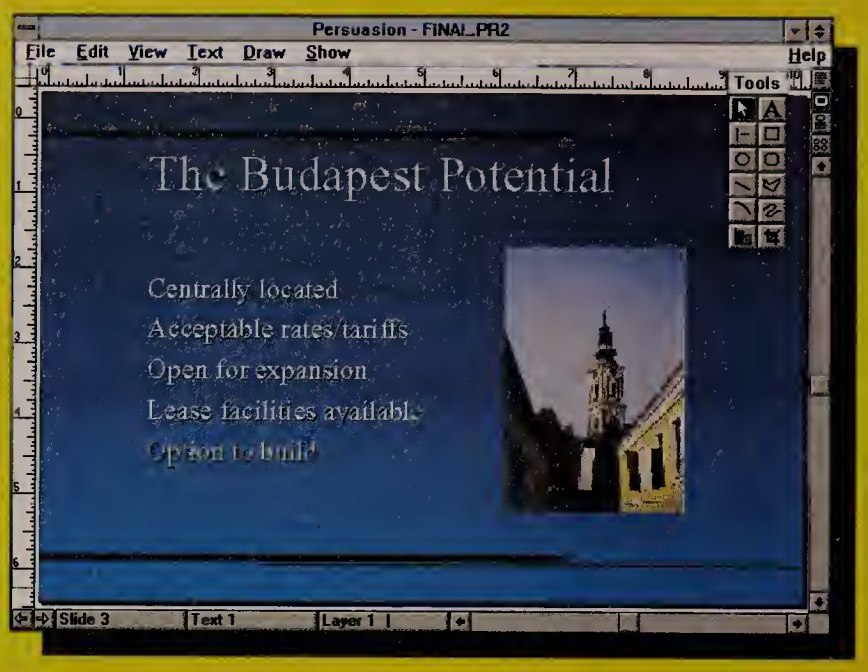

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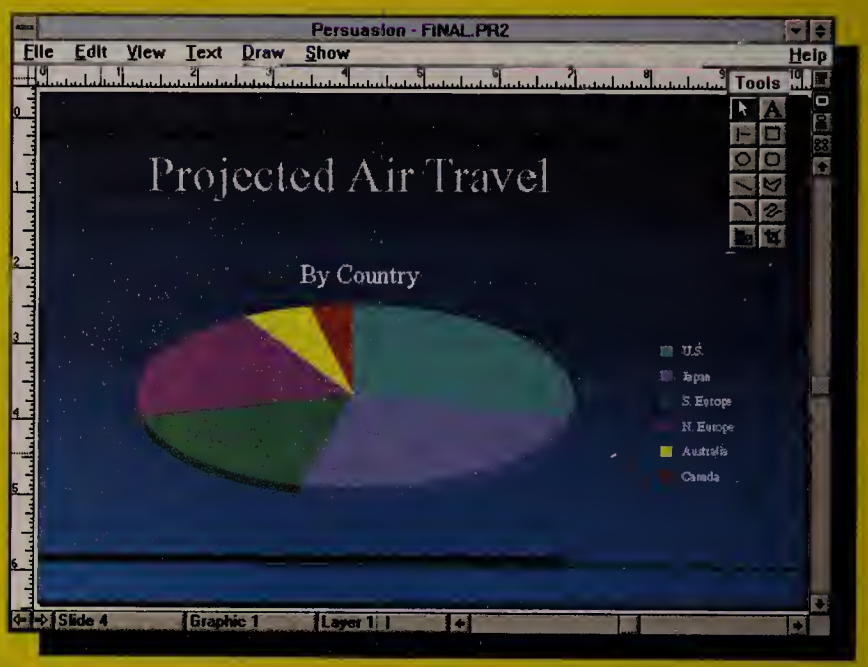

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New Versions of Your Favorite Products

Where in America's Past is Carmen Sandiego?

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Ms. Sandiego gets bigger (starwise), better, and trickier to catch with this new release, which tests your knowledge of America's past rather than geography. Instead of flying you to different states or countries as in prior versions, *Where in America's Past is Carmen Sandiego?* launches you through time using a "chronoskimmer." It costs time to travel, so use your allotted hours wisely. But even if you run out of time before you catch your criminal, don't worry—you can play again. The clever graphics all by themselves are worth the $60 price tag. Broderbund Software, Inc., P.O. Box 6121, Novato, CA 94948-6121; 800/521-6263, 415/492-3154 (fax).

Reader service no. 707

Adobe Type Sets

Irked by the cost of adding fonts to your system? Adobe now offers its new *Type Sets* with eight to ten scalable font outlines in every $149 package—a more than 50 percent savings over Adobe's usual cost. The four sets are arranged by theme; no-nonsense fonts for business correspondence, space-saving faces for spreadsheets and graphs, plus more dramatic typefaces for presentations and invitations. Each set comes with *Adobe Type Manager*, which lets you select typefaces from inside *Windows* applications and print them on virtually any kind of printer. Adobe Systems, 1585 Charleston Rd., P.O. Box 7900, Mountain View, CA 94039-7900; 800/833-6687, 415/961-3769 (fax).

Reader service no. 704

PC-Write Standard Level 2.0

Those who like their word processors with just a dash of salt will enjoy this latest version of Quicksoft's inexpensive *PC-Write*. Now you can add and remove features according to taste, so if you don't do much beyond type and print, you can create a short menu to match. Create a longer menu by adding more editing tools such as Select, Move, Copy, and Insert File. You also get new graphic user interface goodies like multiple windows, pulldown menus, and integrated mouse support. At $129 with various upgrade prices, *PC-Write Standard Level 2.0* is simple yet filling. Quicksoft, 219 First Ave. N #224, Seattle, WA 98106; 800/888-8088, 206/286-8802 (fax).

Reader service no. 705

Texas Instruments microLasers

Texas Instruments has slashed its microLaser printer prices by as much as 33 percent. The microLaser personal printer has been reduced $450 or 31 percent to $999, while the PostScript-capable microLaser PS17 and PS35 have been chopped $600 and $750 to $1399 and $1749, respectively. In the XL line, the 16-ppm microLaser XL falls $1100 to $2399, while the XL PS17 and XL PS35 PostScript printers drop $1200 and $1350 to $2799 and $3149, respectively. Texas Instruments, Inc., Information Technology Group, P.O. Box 202230, Austin, TX 78720; 800/527-3500.

Reader service no. 708

PackRat 4.0

PackRat, the *Windows*-based personal information manager (PIM), gains seven Action Buttons to let you directly access most common *PackRat* commands such as Add, Search, Delete, or Place (for telephone calls). Another Action Button lets you launch any *Windows* application from within *PackRat*, and eight new macrolike Smart Buttons let you combine strings of commands—for example switch to your phone book, search for a name, and place a call all from one button. You also get new Things-To-Do and Contact lists accessible anywhere and an improved calendar function. *PackRat 4.0* is $395 for new users and $49.95 for upgrades. Polaris Software, 1820 S. Escondido Blvd., #102, Escondido, CA 92025; 800/722-5728, 619/743-9964 (fax).

Reader service no. 706

Freedom of Press for Windows 3.0

Windows 3.0 users don't have to buy a $2000 printer to get top-notch PostScript output. *Freedom of Press* lets you build pages with the same 35 scalable fonts and PostScript graphics prowess within *Windows* for only $495. It processes pages inside your CPU, then sends them to a printing device from the background, while you move on to other *Windows* applications (be prepared for a performance hit). You'll need at least 1MB of extended memory and 4MB of hard disk space. A math coprocessor is strongly recommended. Custom Applications, 900 Technology Park Dr., Billerica, MA 01821; 800/873-4367, 508/667-8821 (fax).

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For more information about any product, contact the manufacturer or circle the number on the reader service card.

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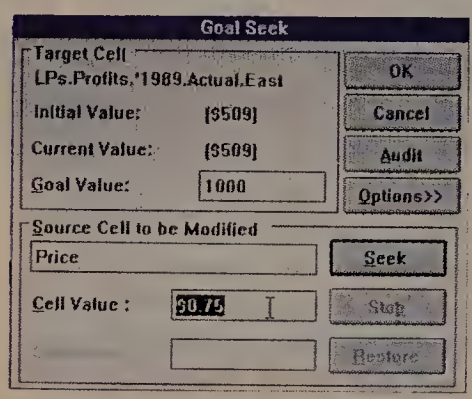

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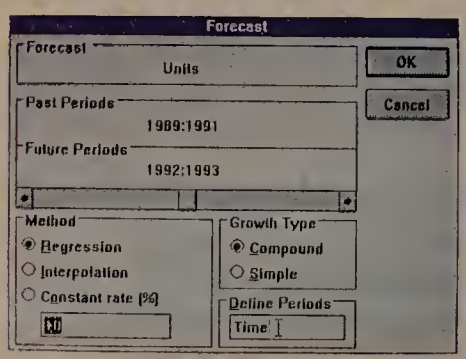

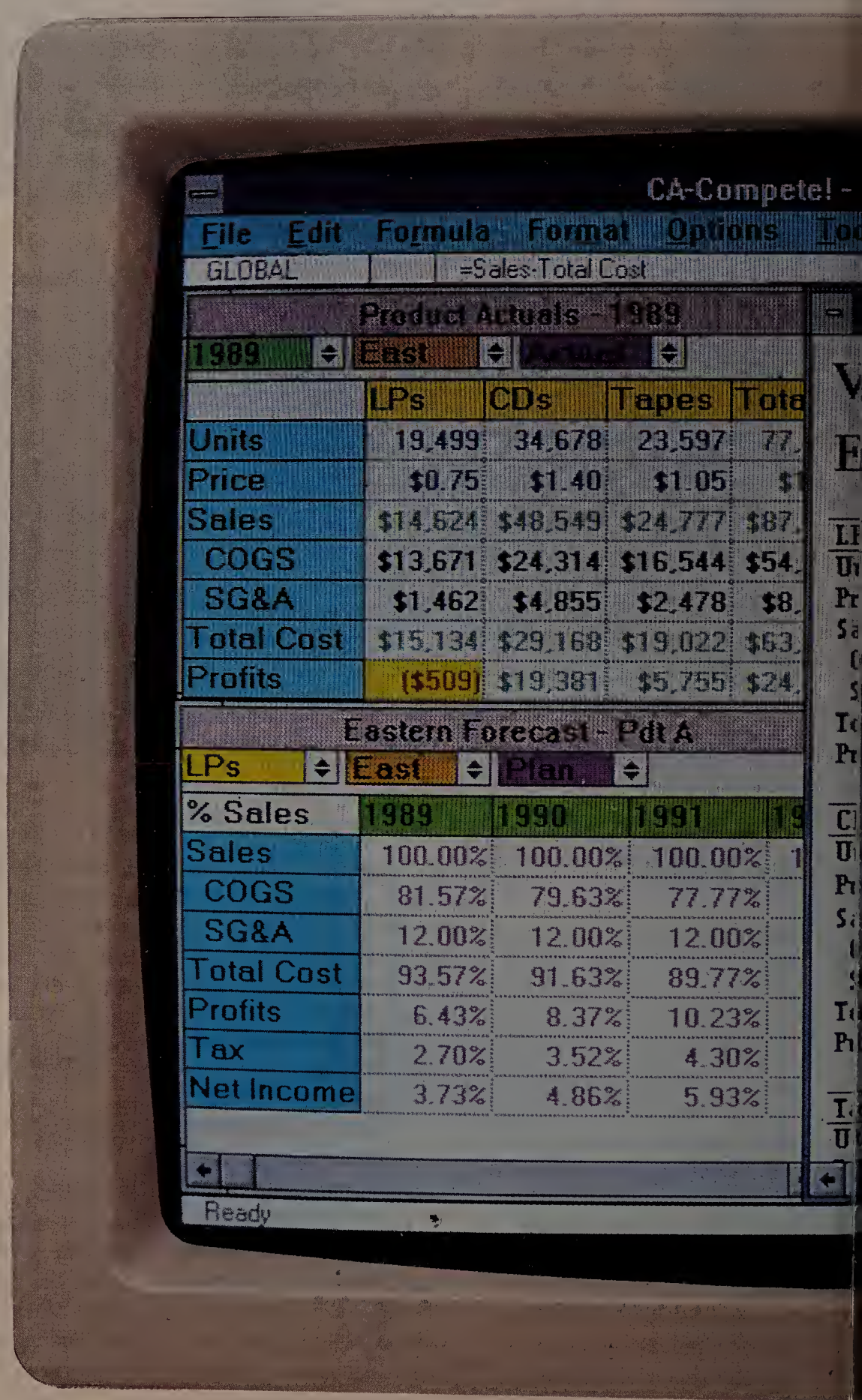

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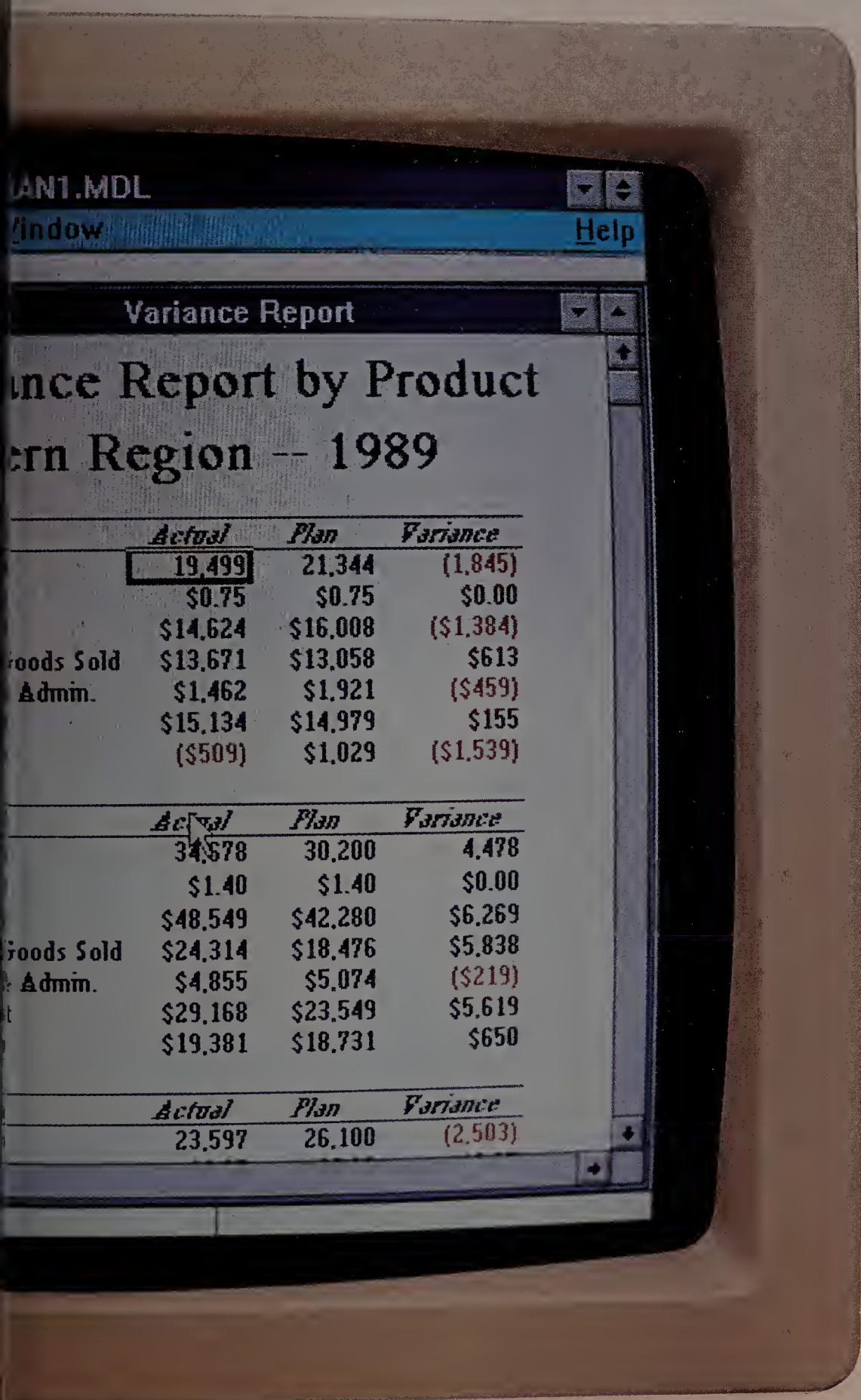

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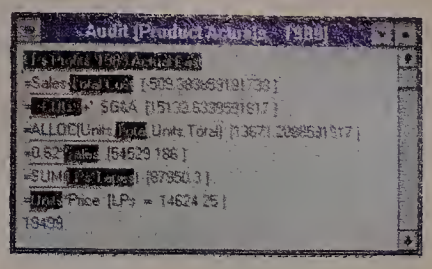

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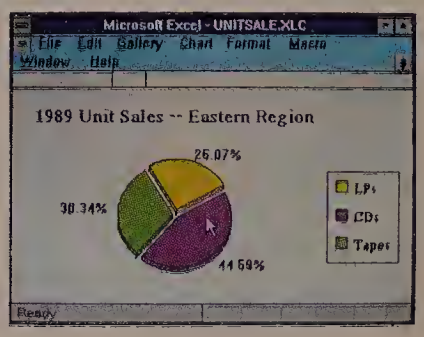

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20-MHz Notebooks: SX ROAD RUNNERS

Choose your favorite SX notebook from [illegible]—and lightest—[illegible]

Or just take our word for it and pick up Dell's [illegible] System 320N

Michael Goodwin and TJ Byers

The 386 revolution is a done deal. More than half of *PC World* readers have 386 or 386SX units on their desks. And since the desktop PCs in your office speed through every application in the book, it's no wonder you get nervous when you think about hitting the road with anything less. Sure, an 8088 notebook is cheap and will do a decent job of monofont word processing, and a fast 16-MHz 286 can even run *Windows*—but how about graphics, presentations, and serious spreadsheets?

If you and your road-running staff are speed addicts accustomed to switching among demanding *Windows*

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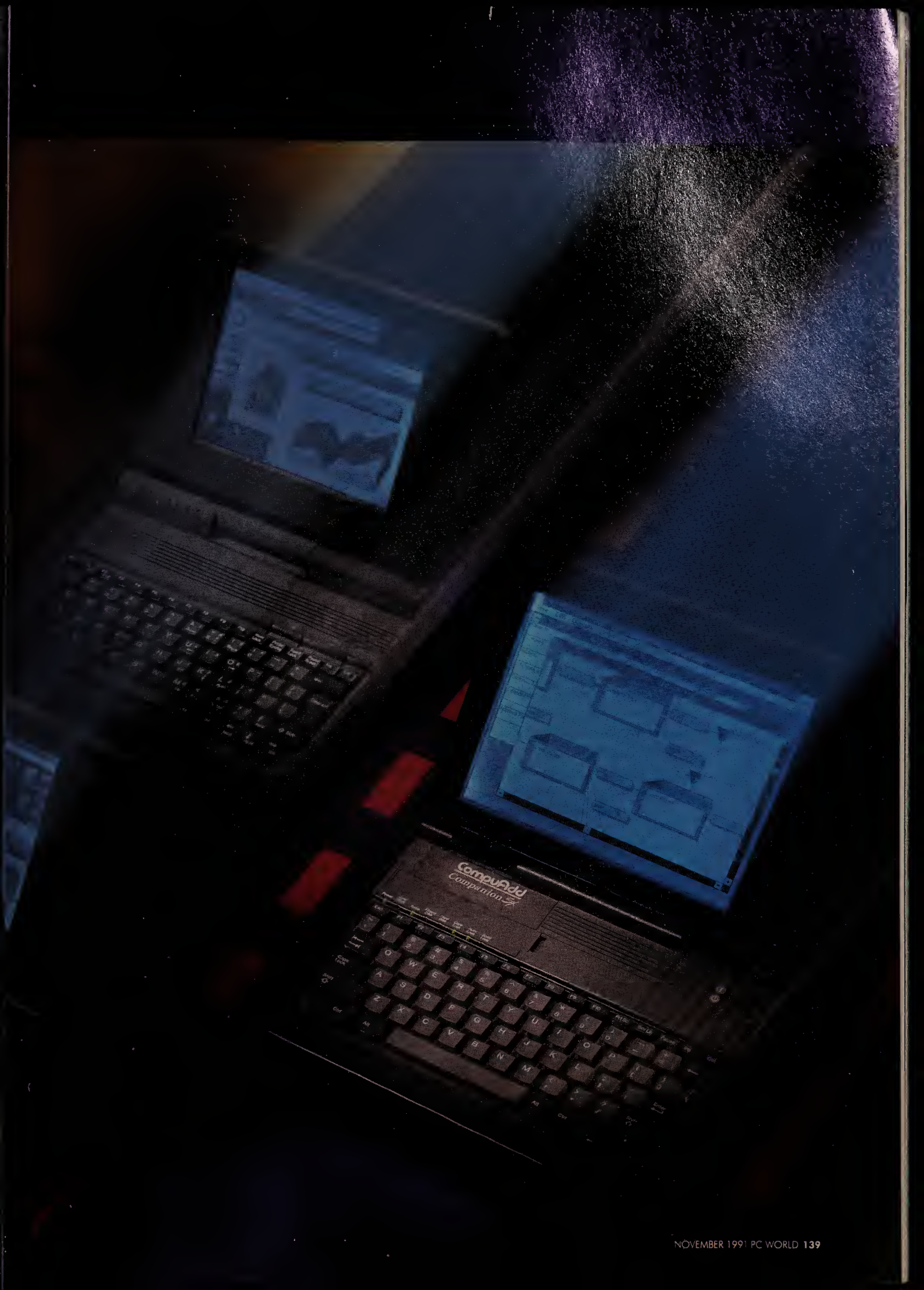
CompuAdd
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presentation packages and jumbo spreadsheets, and you don't have time to waste, you're a prime candidate for one of the new 20-MHz 386SX notebooks. These powerhouses come in the same small packages as their 8088 and 286 cousins but pack a lot more power.

With a few exceptions, the notebooks reviewed here represent the best crop we've seen—faster, lighter, with longer battery life, sharper screens, and easier-to-use keyboards. Unless you need expansion slots on the road (which will force you to pack a bigger, heavier luggable), a 20-MHz SX notebook isn't a luxury anymore, it's a necessity.

It's not easy to score a *PC World* Best Buy rating, but Dell's System 320N earns the honor with an outstanding balance of portability (7.7 pounds), battery life (3¼ hours), and strong performance. An excellent keyboard and an outstanding service-and-support package add extra value. Its $3486 price is good—especially considering that it includes 5MB of RAM and a fax-modem.

Purchase in Haste, Repent at Leisure

But even though the marketplace is full of notebook winners, you still need to choose carefully. Take battery life: A portable PC may be as capable as a desktop, but that won't help if the battery conks out in less than 2 hours. For some time, canny SX merchants have been promising 3 hours of battery life. Only recently has fantasy become reality: Three of these notebooks, AT&T, Dell, and Toshiba, deliver 3 or more hours of battery life without resorting to power-saving features that spin down the hard disk or slow the CPU to a crawl. And if you choose a unit that lets you swap drained batteries for fresh ones without having to power down (three in this roundup do), it's easy to keep computing from coast to coast.

Is there anything to *stop* you from buying one of these 386SXs? Well, good things don't come cheap. These units are $500 to $1000 more than a 286 with comparable RAM and hard disk. But if you choose the system that meets your particular needs, you'll end up with all the performance, battery life, and disk capacity you need for a high-powered portable office.

We also discovered that some notebooks—particularly those made by Chicony and sold under the imprint of several vendors—were unable to complete our test suite without fatal hardware failures or software incompatibilities. The rush to market doesn't always allow time for sufficient testing or quality control, so we suggest that if you're considering a system we haven't reviewed, you ask around to make sure the product has satisfied users.

Hot Hot Hot

This roundup matches 15 of the newest, fastest 386SX notebooks in a contest for top value. We set up and priced all the notebooks in the same standard configuration and then obtained *street prices* for each. The weights we list are *traveling weights* with modem, batteries, and AC charger included. We test service and support with blind calls, so you'll know what to expect if you need help after your purchase. See the sidebar "Buying Smart" for further details.

With all the new notebooks and recent advances in disk, display, and battery technology, your choices are confusing. This is a volatile market. At press time, some vendors had made big price cuts and configuration changes, so call around before purchasing. Choose carefully, and you can walk away with real value in your briefcase—and money left in your bank account.

Michael Goodwin is an associate editor, and TJ Byers and Brett Glass are contributing editors for PC World.

For more information about all products in this article, circle reader service no. 905.

Altima LSX

PROS: Fast, inexpensive, excellent service and support
CONS: Poor battery life, small screen

Every PC buyer shares the same dream: high performance at a low price. Happily, the middleweight Altima LSX turns the dream into reality. It earned the second-fastest score in our performance test lab, and its $3129 street price is one of the lowest in the roundup. Its only serious failing is a brief 2-hour battery life, but recharge time is a respectable 1¾ hours. The keyboard has a nice, full-travel feel, though its emulated page keys will confuse your fingers until you get used to them. And while the screen ties for the smallest in the review, the display is quite sharp and graphics show up well.

Altima's service and support are absolutely tops, with a guaranteed 48-hour turnaround time. So if you need fleet performance, don't want to empty your wallet, and can live with short battery life, look no further than the LSX.

The Altima is a budget-priced traveler with performance rivaling the fastest notebooks.

AST Premium Exec 386SX/20

PROS: Fine keyboard, good service and support
CONS: Small screen, touchy contrast control

AST's Premium Exec 386SX/20 doesn't boast any flashy features, but its solid construction, good speed, fine keyboard, and reasonable cost ($3462) make it a sound product at a fair price. Portability, or lack thereof, is its Achilles' heel: A bulky case and an 8.9-pound traveling weight will keep it from winning many compliments on size or weight. While its girth allows for an excellent keyboard, with full key travel and dedicated page keys, it does not get you a large screen. The display ties for smallest in the roundup, and the contrast control is hard to adjust. Battery life is average: 2½ hours.

Tech support is available 11 hours on weekdays plus half a day Saturday, but California residents will have to pay for the call. While the Premium Exec's only standout feature is its keyboard, it's still one of the best systems overall.

You'll find nothing flashy here, but a solid balance of features makes the AST a strong overall value.

The Safari is a Windows winner. A great screen, fine keyboard, and super battery make you forget its hefty price.

AT&T Safari NSX/20

PROS: Great display, fine keyboard, long battery life, preinstalled Windows
CONS: Expensive, slow recharge

At first glance, AT&T's $4181 Safari NSX/20 looks a little expensive, but if you're a *Windows* devotee, you get a lot for your money—including the best battery life in the roundup (3½ hours), a huge screen, a mouse, and a preinstalled copy of *Windows*. You can even swap batteries on the fly. And while the 8½-pound Safari is no featherweight, its 10-inch screen delivers the best gray-tone rendition of *Windows* we've seen. The keyboard is excellent, too. Is there anything wrong with this machine? Well, its RAM capacity tops out at 6MB, and you'll need the optional quick charger ($229) if you want to cut down its long 4½-hour recharge time.

Technical support is quite good. While its price and weight keep it out of the winner's circle, *Windows*-hounds might find this machine their smartest buy.

Compaq LTE 386s/20

PROS: Fast, small, 10MB RAM capacity, quick recharge
CONS: Expensive, awkward keyboard

Compaq's LTE 386s/20 is another dandy *Windows* machine. For starters, it's the fastest notebook you can buy. You can install 10MB of RAM, and there's a mouse port, a 60MB drive option, and a connector for Compaq's docking station. But neither its speed nor its pedigree comes cheap: You'll have to plunk down a hefty $4851 in our standard configuration with a 60MB hard disk.

The screen is on the small side, but text is crisp, and graphics look good. The worst problem with the LTE is its keyboard, with its emulated page keys and nonstandard cursor key layout. Fortunately, Compaq provides a port to let you plug in an external keyboard. And Compaq's toll-free tech support is speedy and accurate. Still, when all is said and done, speed is the LTE's raison d'être. For top-gun performance, it has no equal.

The speed king LTE is small and expandable—but its price makes you dig deep, and the keyboard is frustrating.

FEATURES EVALUATION

Plenty of Choices for the Movable Office

You're likely to find the balance of size, battery life, performance, price, and service you need from Best Buy Dell System 320N. But if you need outstanding battery life, check out AT&T's Safari NSX/20.

● Yes
○ No
n/a = not applicable

	Altima LSX	AST Premium Exec 386SX/20	AT&T Safari NSX/20	Compaq LTE 386s/20	CompuAdd Companion SX	Dell System 320N
Standard features						
Street price[1]	$3129[2]	$3462	$4181	$4851[3]	$3474	$3486[2]
List price[1]	$3848[2]	$4592	$5228	$5966[3]	$3474	$3486[2]
CPU speed	20/10 MHz	20/8 MHz	20/8/4 MHz	20/8 MHz	20/10/8 MHz	20/8 MHz
Portability						
Traveling weight (pounds)[6]	8.4	8.9	8.5	8.7	7.4	7.7
Size (inches)	8.6 x 11.1 x 2.2	9 x 11.5 x 2.3	9.9 x 12 x 1.8	8.8 X 11.1 X 2	8.5 x 11 x 1.8	8.5 x 11 x 2
Volume (cubic inches)	210	238	214	195	168	187
Battery						
Battery life (power-saving enabled/ disabled, hours:minutes)	2:30/1:55	2:30/2:30	4:20/3:30	3:30/2:30	2:40/1:55	3:15/3:15
Recharge time	1:45	2:30	4:30	1:26	5:00	2:30
Change batteries on the fly	○	○	●	○	○	●
Expandability						
RAM capacity	5MB	8MB	6MB	10MB	6MB	5MB
Largest hard disk option	60MB	80MB	40M8	60MB	40MB	60MB
Internal modem/fax option	●/●	●/●	●/○	●/○	●/●	●/●
Mouse port	○	○	●	●	●	●
Expansion chassis available	○	○	●	●	●	●
Keyboard						
Cursor keys in inverted T	●	●	●	○	●	●
Dedicated page control keys	○	●	●	○	○	●
Dedicated functian keys	○[7]	○[7]	●	○[7]	○[7]	●
Screen						
Size (square inches)	35	35	45	38	45	35
Service and support						
Warranty (months)	12	12	12	12	12	12
On-site service available/less than $100	●/●	○/○	○/○	○/○	●/●	●/●
Vendor support						
Central support/toll free	●/●	●/●[8]	●/●	●/●	●/●	●/●
Daily support (hours)	7	11	9	12	11	15
Weekend support	●	●	○	○	○	●
Electronic BBS/fax	●/●	●/●[9]	○	○/○	●/●	●/●
Turnaround policy	48 hours	3 days[8]	3–5 days[9]	○	48 hours	24 hours on-site
Vendar-to-dealer support						
Dedicated support staff required	●	●	●	●	●	no dealers
Support staff training required	●	●	●	●	●	no dealers
Dedicated suppart line for dealers	●	●	●	●	●	no dealers
Inventory and parts requirement	●	●	●	●	●	no dealers
						BEST BUY

[1] Standard configuratian includes 4MB RAM, 1.44MB flappy drive, 40MB hard disk, at least one parallel and ane serial port, 2400-baud internal madem, and DOS.
[2] Includes 5MB RAM.
[3] Includes 60MB hard disk.
[4] Estimated street price.

	Everex Tempo LX	IBM PS/2 Model L40 SX	Librex 386SX	NEC UltraLite SX-20	Northgate SlimLite SX20	Panasonic CF-370H6	Tangent Model 320N	Toshiba T2000SXe	Zeos Notebook 386-20MHz
	$2909[2,7]	$5446[3]	$3208	$3476	$3499[2]	$3991[2,3]	$2867[2,5]	$4218	$3514[2,3]
	$3728[2]	$6609[3]	$4948	$4733	$3499[2]	$4545[2,3]	$5367[2,5]	$5367	$3514[2,3]
	20/8 MHz	20/10/5 MHz	20/10 MHz	20/5 MHz	20/8 MHz	20/10 MHz	20/10 MHz	20/10 MHz	20/3 MHz
	9	9.7	6.6	10	7.4	7.9	8.4	8.7	9
	10 x 12.2 x 2	10.7 x 12.6 x 2.1	8.2 x 11.7 x 2	8.7 x 11.5 x 2.5	8.3 x 11.1 x 2	10 x 12.2 x 1.7	8.6 x 11.8 x 2.1	10 x 12.1 x 1.9	10 x 12.2 x 2
	244	283	192	250	184	207	213	230	244
	2:45/2:15	2:15/1:30	1:25/1:20	2:40/2:15	1:50/1:20	2:40/2:10	2:00/1:55	3:30/3:00	2:50/2:25
	0:58	9:00	5.00	2:00	2:35	1:22	1:42	1.00	0:58
	○	●	○	○	○	○	○	○	○
	5MB	18MB	4MB	10MB	5MB	5MB	5MB	10MB	5MB
	60MB	60MB	60MB	60MB	40MB	60MB	60MB	60MB	60MB
	●/●	●/●	●/●	●/●	●/○	●/●	○/○	●/○	●/●
	○	●	○	○	○	○	○	○	○
	○	●	○	○	○	○	●	●	○
	●	●	●	●	●	●	●	●	●
	●	●	○	○	●	●	●	●	○
	○[7]	●	●	●	●	●	○[7]	●	●
	43	45	43	43	35	35	43	35	43
	12	12	12	12	12	12	12	12	12
	○/○	●/○	○/○	○/○	●/●	○/○	○/○	○/○	○/○
	●/●	○/○	○/○	●/●	●/●	●/●	●/●	●/●	●/●
	9	n/a	n/a	11	24	9	9	11	24
	○	n/a	n/a	○	●	○	○	○	●
	●/●	○/○	●/●	●/●	●/●	○/○	●/●	●/●	●/○
	48 hours	○	24 hours	2–5 days	5–7 days	○	48 hours	24 hours	24 hours
	○	○	○	●	no dealers	●	no dealers	●	no dealers
	○	●	●	●	no dealers	●	no dealers	●	no dealers
	●	●	●	●	no dealers	●	no dealers	○	no dealers
	○	●	●	●	no dealers	○	no dealers	●	no dealers

[5] Without modem.
[6] Including PC, modem, battery, AC adapter.
[7] <F11> and <F12> are emulated.
[8] Toll call in California.
[9] 24-hour turnaround at extra cost.

CompuAdd Companion SX

PROS: Fast, portable, great screen, fine service and support
CONS: Short battery life, slow recharge

If you're looking for a very fast, extremely portable notebook at a nice price, CompuAdd's $3474 version of TI's TravelMate 3000 is probably the machine for you. This is one of the smallest notebooks in our roundup, but its screen ties for the largest. And if you use graphics programs, you'll appreciate the Companion's unusual ability to display 1024 by 768 super-VGA resolution on an external monitor. Unfortunately, as so often seems to be the case, light weight also translates into short battery life: You get less than 2 hours, and you need a full 5 hours to recharge. In addition, the emulated page keys and sliver-sized function keys mar the layout of the keyboard.

When you add it up, even if you need to pack a couple of extra batteries, the Companion's outstanding portability, hot performance, and fine service-and-support package make this notebook a solid buy.

You'll like the look of the CompuAdd's screen. While light and fast, the Companion is slow on the recharge.

Worn-Out Batteries: No Dumping Allowed!

Chances are, the last thing you were thinking about when you bought a brand-new notebook was replacing its worn-out batteries, but the nickel-cadmium batteries that power these units *do* wear out after about 500 charges. In a couple of years, depending on how much you use them, you'll have to shell out for a new battery pack. That's no big deal, but what are you going to do about getting rid of the old battery?

No, you can't just pitch your used batteries into the nearest garbage can. Or you shouldn't, anyway. Cadmium, one of the battery's ingredients, is more toxic than lead or mercury. Most municipal disposal systems aren't set up to deal with hazardous wastes. What's more, federal laws prohibit dumping these batteries at sea or in landfills, where most garbage ends up.

At present, the new nickel-hydride batteries featured in the Toshiba T2000SXe are one good solution because they eliminate the cadmium altogether. (They also promise between 10 and 20 percent longer life for the same weight, but that's another story.) So far they're available only from Toshiba, and because they require a different type of charger, you can't use them unless your notebook was designed to.

Finding a licensed nickel-cadmium recycler isn't easy, especially one that accepts individual batteries. To help you in your efforts to maintain a livable earth, we've turned up a few—and to make this idea more tempting we list only those that don't charge a fee. Please remember to call the recycler for shipping instructions. Here's the short list:

WHERE TO BUY

Basalt Industries, Inc.
Pecos, Texas
915/447-3272
Reader service no. 750

Dallas Environmental Services Technology
Waxahachie, Texas
214/299-6954
Reader service no. 751

Environmental Pacific Corp.
Amity, Oregon
503/835-1313
Reader service no. 752

Inmetco
Ellwood City, Pennsylvania
412/758-5515
Reader service no. 753

Buying Smart: Desktops to Go

The reason you spend extra bucks for a 20-MHz SX notebook is to run your favorite business applications, *Windows* included, at a decent clip. Whether you're putting together a *PowerPoint* presentation on a seat-back tray or lugging *Excel* projections to a sales meeting, you'll need a package that's easy to carry.

PORTABILITY

Don't even *consider* anything heavier than 10 pounds traveling weight—that's PC, modem, battery, and AC charger. If you're contemplating one of the units that edge toward that 10-pound limit, look for, say, a desktop-quality keyboard or longer battery life to make the freight worth its weight. Best in class: Librex.

BATTERY

Although faster CPUs burn more power, you should still demand at least 3 hours of battery life—without using power-saving features such as hard disk timeout or slower CPU speed. (These options stave off the inevitable for a few minutes, but they slow you down, too.) Recharge time of 1½ hours or less is key if you schedule meetings close together or forget to leave the charger plugged in overnight. Finally, you'll discover that the ability to swap drained batteries for fresh ones without exiting your applications is a godsend, especially if you multitask under *Windows*. Battery-life champ: AT&T.

PERFORMANCE

These 20-MHz systems are all hotter than their 16-MHz predecessor, but there's still quite a range of difference. Our top speedster, the Compaq LTE, finished the *dBASE* benchmark almost 5 minutes faster than Everex's Tempo. If tip-top performance is a requirement, remember that adding more RAM often provides an impressive speed-up for *Windows*.

EXPANDABILITY

Many 386-specific applications, and some DOS favorites such as *1-2-3*, demand a lot of RAM. We consider 4MB the minimum RAM capacity for an SX notebook, but a machine like IBM's L40 SX, which supports 18MB, gives you room to grow. Unless you enjoy fumbling around with a pocket modem, look for an internal-modem option. Only Tangent lacks it. Finally, while a 40MB hard disk is adequate for most purposes, *Windows* users will probably want 60MB. Overall, IBM takes expandability honors.

KEYBOARD

The keyboard that comes closest to the standard 101-key model is best. Emulated keys (which, for example, force you to hold down a special key to turn a cursor key into <Page Down>) slow typing and increase errors. Look for dedicated cursor keys in the familiar inverted T and dedicated page keys. Standard layout for <Alt> and <Ctrl> make life easier too. And test the keyboard's touch before committing yourself. IBM's impeccable keyboard is an easy winner.

SCREEN

All these systems have bright backlit or sidelit VGA displays. Naturally, the bigger the screen the better, but watch out for wide screens like Panasonic's that distort graphics and make text hard to read. The more shades of gray your notebook can display, the better color graphics appear. All the notebooks in this review display 16 shades of gray (in 640 by 480 resolution), a reasonable minimum. AT&T, CompuAdd, and IBM tie for biggest screen.

SERVICE AND SUPPORT

There's not much you can repair on a notebook outside the factory, so on-site service is less important than for desktop PCs. Quick replacement is the key service issue, with the vendor making a reasonable effort to recover your data if you've got disk trouble. But an on-site visit that gets you up and running within 24 hours is still the most desirable support option for most users. If you need advice, not repair, you should expect fast, accurate answers. To compare tech support, we make three blind calls to each vendor, ask three questions of varying difficulty, and note the time it takes to get an answer. We also score on promptness, accuracy, and standard support policies. Altima and Dell tie for top ratings.

STREET PRICE

We base our cost comparisons on street price. And to make sure everyone is competing on a level playing field, we price every system in the same standard configuration: 4MB to 5MB RAM, 40MB hard disk, built-in floppy drive, 2400-baud internal modem, and DOS. For every machine (except those whose manufacturers sell direct), our research staff calls at least three PC dealers in three major cities across the country for price quotes, then averages results for each notebook. The lowball winner: Tangent.

Dell System 320N

PROS: Highly portable, great battery, fine keyboard, top service and support
CONS: Small screen, mediocre screen contrast

Dell touched all the bases when it put together this fast, small, 7.7-pound notebook. At $3486 it isn't the cheapest you can buy, but the price includes 5MB of RAM and a fax-modem. The battery lasts over 3 hours, and a maintenance battery gives you 2 minutes to slap in a fresh one without quitting your application. Also, the System 320N has a full keyboard, albeit slightly miniaturized to fit the unit's small frame. The only downside is a small screen with lower contrast than most.

Dell delivers free on-site service, with a 24-hour turnaround policy for every notebook, and phone support is terrific. Automated fax service lets you dial in to order tech support documents sent to your fax machine. Add long battery life, an excellent keyboard, and outstanding portability, and you've got a road workers' Best Buy.

Dell's Best Buy has a winning combo of portability, great battery, fine keyboard, and top service and support.

Like its Zeos twin, the LX is heavy and slow—but you can't find a cheaper quick-charging machine.

Everex Tempo LX

PROS: Low price, excellent screen, fast recharge, free Windows and mouse
CONS: Large, heavy, slow

If price is paramount, you'll want to know that this system (a virtual twin to Zeos's Notebook 386, except for the keyboard and the selection of bundled goodies), costs only $2909 and comes with 5MB of RAM, *Windows,* a mouse, and a carrying case. Other attractions include lightning recharge and a full-travel keyboard that's a pleasure to use—although <Ctrl> is placed where your fingers expect to find the <Caps Lock> key. The big, sidelit screen is a plus as well, with a wide viewing angle and excellent contrast. On the downside, this big, 9-pound unit is one of the heaviest and slowest in our roundup.

Service and support are good, with a 48-hour turnaround. The Tempo's big screen, generous software bundle, quick recharge, and swell price make it a decent choice if you're on a budget—but you'll have to sacrifice some performance and portability.

IBM PS/2 Model L40 SX

PROS: Great keyboard and screen, 18MB RAM capacity, 60MB drive standard
CONS: Large, heavy, slow, expensive, short battery life, long recharge

The bad news first: IBM's PS/2 Model L40 SX barely slips in under our 10-pound traveling weight limit, and it's also the most expensive system in the roundup ($5446 with a 60MB hard disk). Battery life is extremely short at 1½ hours, and the L40 suffers from an unbelievable 9-hour recharge time. It's not even particularly speedy.

So what is there to recommend this machine? Try out the impeccable PS/2 keyboard, and you'll know. The sculptured, full-travel keys will make you swear you're working on your desktop PC. Nor can you beat IBM's 18MB RAM capacity or its big, clear 10-inch screen. Top-notch service and support comes through IBM authorized dealers. So if you want a plug-in portable with the best keyboard in town—and price is no object—you'll like this IBM. But if true portable computing is what you need, you can do much better.

If you want an expandable plug-and-play portable with a great keyboard and screen, check out the pricey IBM.

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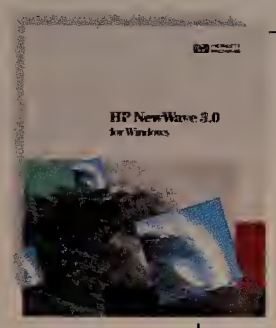

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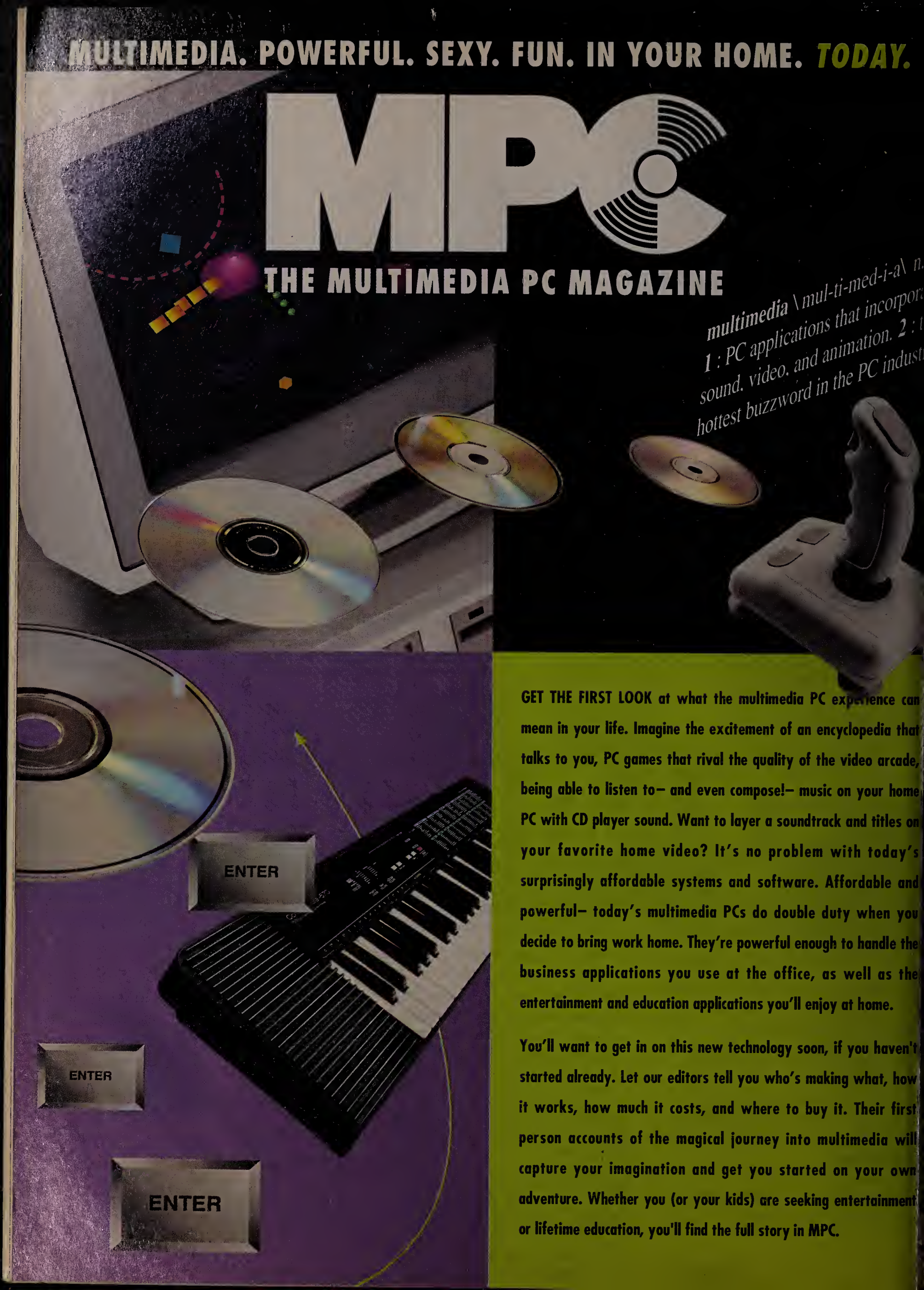

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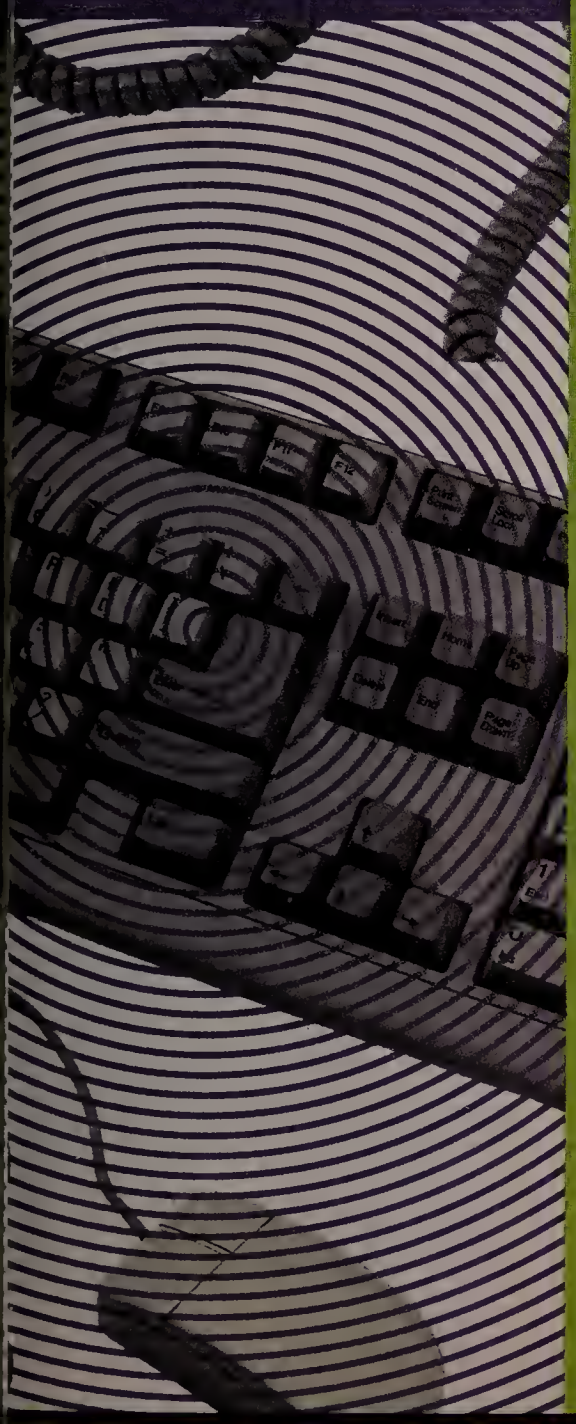

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PC WORLD TEST REPORT

20-MHz 386SX Notebooks Give a Scorching Performance

These 20-MHz 386SX notebooks are every bit as hot as their desktop counterparts. The Compaq LTE 386s/20 with its special memory caching is the fastest of the fast. But it's a real surprise to see the low-priced Altima LSX running neck and neck with its pricey competitor.

Best Buy

WordPerfect

	seconds
Compaq LTE 386s/20	88
Altima LSX	93
CompuAdd Companion SX	97
Tangent Model 320N	97
Toshiba T2000SXe	99
Librex 386SX	100
Dell System 320N	101
AST Premium Exec 386SX/20	105
AT&T Safari NSX/20	105
IBM PS/2 Model L40 SX	106
Panasonic CF-370H6	109
Northgate SlimLite SX20	113
Zeos Notebook 386-20MHz	114
Everex Tempo LX	115
NEC UltraLite SX-20	119

seconds 0 — 59.5 — 119

dBASE IV

	seconds
Compaq LTE 386s/20	818
Altima LSX	865
Toshiba T2000SXe	906
Librex 386SX	914
Dell System 320N	931
Tangent Model 320N	941
AST Premium Exec 386SX/20	953
IBM PS/2 Model L40 SX	955
CompuAdd Companion SX	961
Northgate SlimLite SX20	979
AT&T Safari NSX/20	990
Panasonic CF-370H6	1035
NEC UltraLite SX-20	1041
Zeos Notebook 386-20MHz	1052
Everex Tempo LX	1117

seconds 0 — 558.5 — 1117

1-2-3

	seconds
Compaq LTE 386s/20	1177
Altima LSX	1220
Tangent Model 320N	1287
Librex 386SX	1341
Northgate SlimLite SX20	1362
CompuAdd Companion SX	1368
AST Premium Exec 386SX/20	1397
Dell System 320N	1417
Panasonic CF-370H6	1420
AT&T Safari NSX/20	1424
Toshiba T2000SXe	1431
IBM PS/2 Model L40 SX	1464
Everex Tempo LX	1502
NEC UltraLite SX-20	1509
Zeos Notebook 386-20MHz	1537

seconds 0 — 768.5 — 1537

Methodology
We tested all the computers with 4MB RAM except Altima, Dell, Everex, Northgate, Panasonic, Tangent, and Zeos, which we tested with 5MB RAM. We used the vendor's version of DOS.

WordPerfect
We reformat three *WordPerfect 5.1* documents that vary in size from 5K to 55K. The files are text with some boldface and underlining; one document includes a TIFF image.

dBASE IV 1.1
With the caching feature enabled, we complete an unindexed search for a single record in a 100,000-record parts table. Then we index the table, run the transaction processing module, and post 600 records.

1-2-3
We load the application, followed by three separate worksheets (arithmetic, financial, and scientific). We perform various changes and run recalcs on each. Finally we use the *MAPS* add-in from Management Advisory Services of Seattle to run a number of financial forecasts.

Windows 3.0
Timing begins and ends at the DOS prompt. We launch *Windows* along with a macro that loads *Microsoft Excel* with a financial worksheet and initiates a recalc. Then the macro loads Lotus's *Ami Pro* along with a 50K document that contains a 500K TIFF image. Finally, the macro launches *Micrografx Designer*, opens a drawing, displays it on screen, and exits to DOS.

Windows 3.0

	seconds
Altima LSX	150
Compaq LTE 386s/20	152
Tangent Model 320N	155
Dell System 320N	163
CompuAdd Companion SX	167
Northgate SlimLite SX20	168
Librex 386SX	169
Toshiba T2000SXe	170
Panasonic CF-370H6	173
AST Premium Exec 386SX/20	175
AT&T Safari NSX/20	178
Zeos Notebook 386-20MHz	178
IBM PS/2 Model L40 SX	183
Everex Tempo LX	184
NEC UltraLite SX-20	196

seconds 0 — 98 — 196

Paradox

	seconds
Altima LSX	723
Compaq LTE 386s/20	725
CompuAdd Companion SX	761
Toshiba T2000SXe	772
Tangent Model 320N	780
Librex 386SX	787
Dell System 320N	790
AST Premium Exec 386SX/20	797
IBM PS/2 Model L40 SX	803
Panasonic CF-370H6	818
AT&T Safari NSX/20	836
Zeos Notebook 386-20MHz	855
Everex Tempo LX	868
Northgate SlimLite SX20	868
NEC UltraLite SX-20	913

seconds 0 — 456.5 — 913

Paradox
Starting with an orders table, we compare each record with an available stock table. The application finds the current price for the items and inserts the resulting record into an invoice table.

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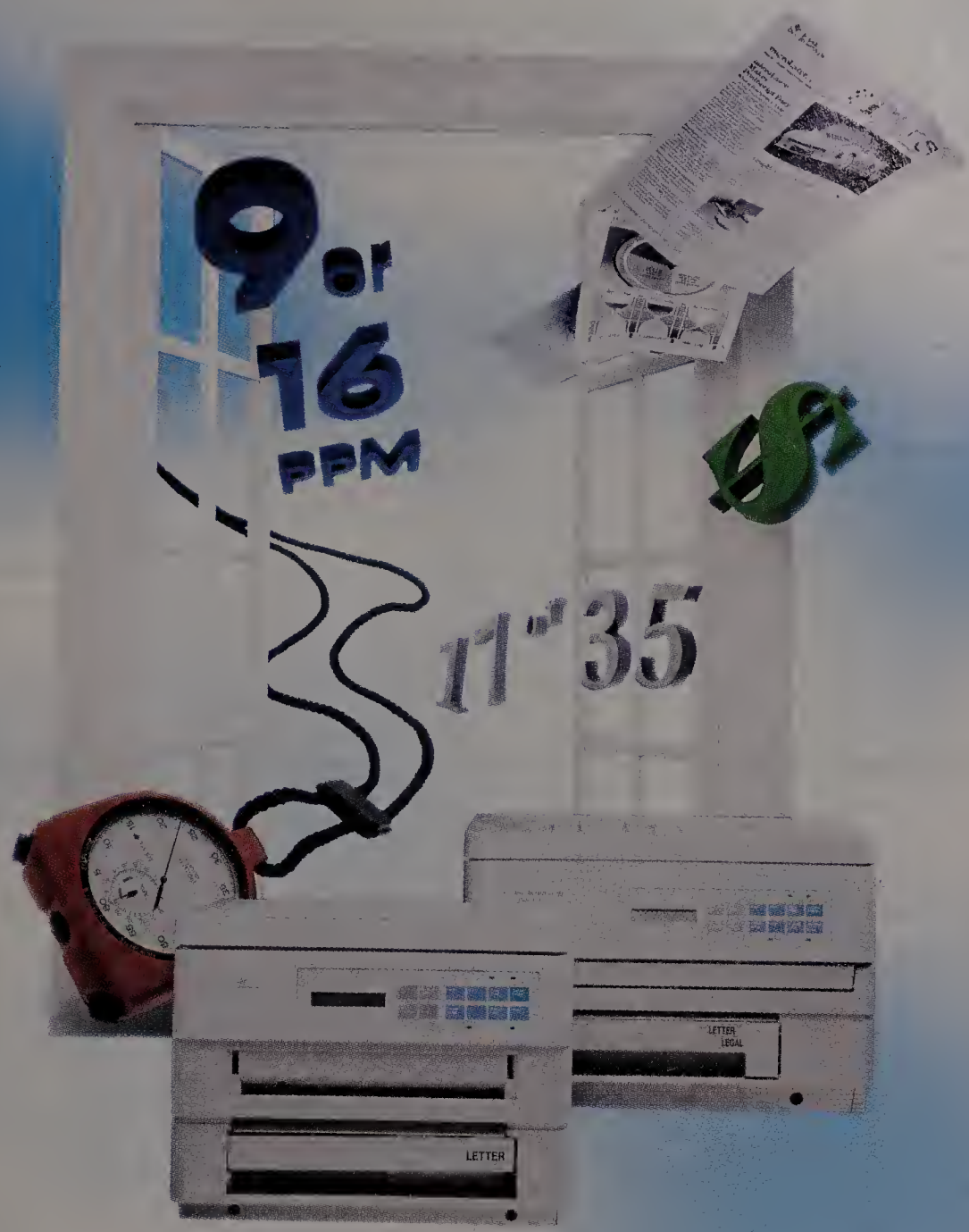

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Librex 386SX

PROS: Extremely small and light, fine price, excellent screen
CONS: Slow recharge, very short battery life, 4MB RAM limit

If you're looking for prime portability at a great price, you can stop here. At a mere 6.6 pounds traveling weight, the fast, low-priced ($3208) Librex 386SX is the featherweight champ of the roundup. And despite its trim size and weight, the Librex's screen is nice and large. The keyboard has a comfortable feel, although the page keys are emulated.

The only serious trade-offs are battery life and recharge time: a short 1⅓ hours and a long 5 hours, respectively. Dealers provide tech support, but Librex offers an unusual 24-hour *faxback* service that faxes you technical documents you choose from a BBS menu. So if you don't need much battery longevity and can live with 4MB of RAM, this light, low-priced, fast-performing system with its good screen and keyboard is well worth considering. *[At press time, Librex announced that it was dropping its already excellent price even further. —Ed.]*

The quick, tiny 6.6-pound Librex is the portability king. But battery life is short and recharge time is long.

Networking Notebooks: Portable LAN Adapters

Brett Glass

Notebooks don't come with the expansion slots you need for standard LAN cards, so how do you hook up to the LAN back in the office?

AT&T, Compaq, CompuAdd, IBM, and Toshiba offer expansion units that include at least one slot. You put a network card in the docking station, connect it to the LAN, and slide your notebook into the docking station. That's an easy, albeit expensive, solution, as these units may cost as much as $1000.

Fortunately, there's an alternative—one of a new breed of LAN adapters (some no bigger than a pack of cigarettes) from Accton, D-Link, IQ Technologies, Solectek, and Xircom. These units (some as little as $295) attach to your notebook's parallel port. But there's a trade-off: They're noticeably slower than standard LAN boards.

Suppose you need the parallel port for a printer? IQ Technologies' and Xircom's parallel port LAN adapters provide pass-through capability that allows you to use a local printer and the LAN at the same time. Xircom requires an extra-cost option to do this trick.

We're also seeing LAN adapters that hook to the notebook's expansion bus, assuming it has one. These units perform more like standard adapters but cost more than parallel port products. Megahertz's token ring and ethernet adapters ($999 and $599) take this approach, connecting to proprietary bus ports on some Compaqs and Toshibas.

Of course, a LAN adapter must have drivers for your network operating system. The Megahertz ethernet adapter is compatible with the popular Western Digital 8003 EB card, which allows you to use any compatible driver. All the other adapters require their own drivers; Xircom has the widest selection. Consult the manufacturer to find out whether your LAN is supported.

WHERE TO BUY

EtherPocket
Accton Technology
800/926-9288
Reader service no. 754

ARCnet Pocket LAN Adapter, Ethernet Pocket LAN Adapter
D-Link Systems
714/455-1688, 714/455-2521 (fax)
Reader service no. 755

p.LAN
IQ Technologies
800/227-2817, 206/485-8949 (fax)
Reader service no. 756

Megahertz External Ethernet Adapter, Megahertz External Token Ring Adapter
Megahertz
800/527-8677, 801/272-6077 (fax)
Reader service no. 757

LAN-ARC, LAN-CX, LAN-10BT, LAN-TR
Solectek
800/437-1518, 619/457-2681 (fax)
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Pocket ARCnet, Pocket Ethernet
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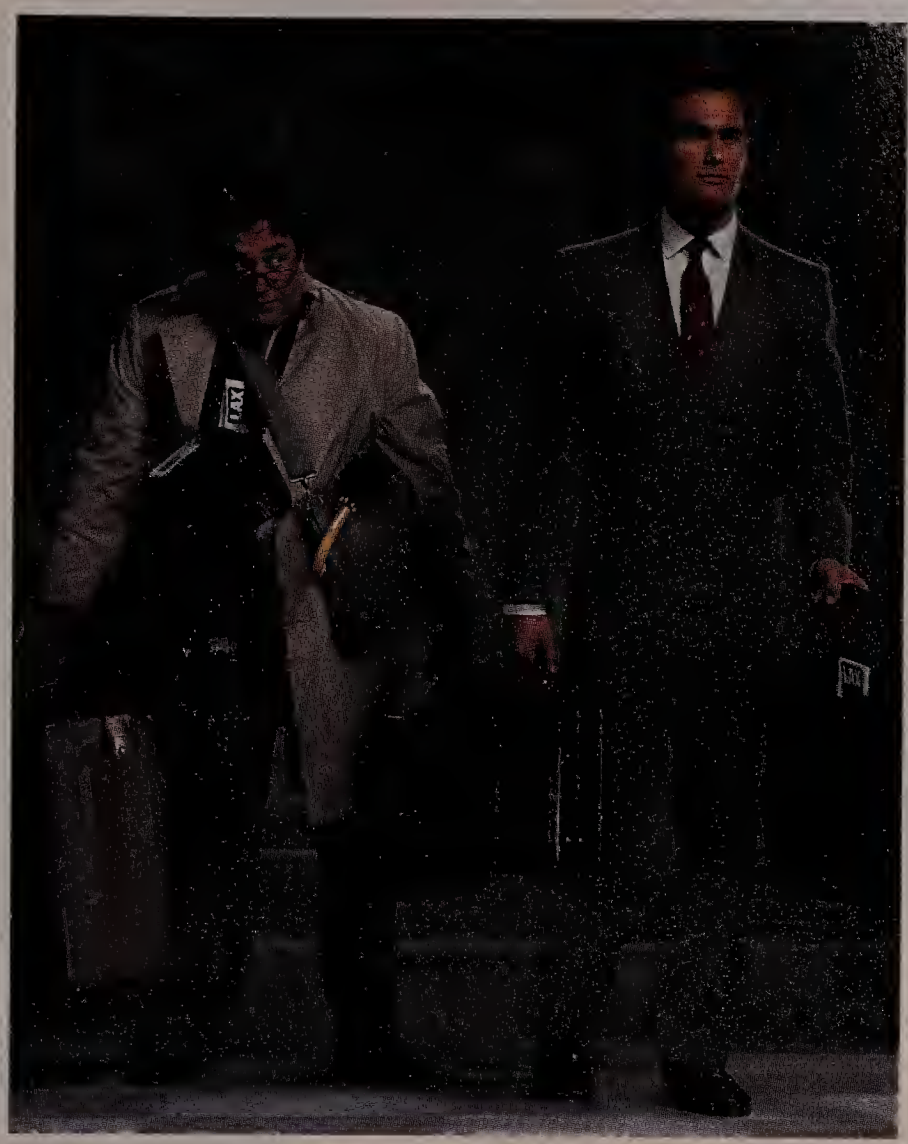

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NEC UltraLite SX-20

PROS: Fine screen, 10MB RAM capacity, SCSI support
CONS: Large, heavy, slow

If you're trying to build up your biceps, the UltraLite SX-20 could save you some time at the gym. At 10 pounds, this sturdy, midpriced ($3476) system is the heaviest in our roundup. It's also the slowest, and battery life is only 2¼ hours. The keyboard isn't much compensation—page keys are emulated, and it's got a mushy feel. But there is *some* good news: It has an excellent screen, and this is the only notebook around that has a SCSI port, so if you're running a multimedia demo on the road, you can hook up to a SCSI CD ROM player.

Oddly enough, the charger NEC sent us caused radio interference, but we're told the current version not only solves the problem but also is much lighter. In any case, this highly expandable machine may be a smart choice for users who need a SCSI interface, but most people will find its weight and sluggish performance reason to look elsewhere.

The NEC has a fine screen and terrific SCSI expandability. Unfortunately, it's also heavy and slow.

The portable, well-supported SlimLite has an innovative keyboard and is attractive despite its short battery life.

Northgate SlimLite SX20

PROS: Light, small, fine keyboard, outstanding service and support
CONS: Very short battery life, small screen

Extreme portability is the big benefit with this Northgate system, and brief battery life is its big failing. The $3499 SlimLite SX20 weighs in at a mere 7.4 pounds, and as its name implies, it will slip easily into a crammed briefcase. Best of all, the SlimLite packs a full keyboard in the bargain—one that uses an unusual but surprisingly effective layout, with the function keys grouped in two rows next to the <Esc> key. The screen is small but clear and bright. Unfortunately, the SlimLite's 1⅓-hour battery life is painfully short, and a recharge takes slightly longer than 2½ hours.

Northgate's 24-hour-a-day, 365-day-a-year, toll-free technical support is first-rate. And although its backward battery life and somewhat poky performance hold it back, this highly portable notebook still gives you a lot to like.

Panasonic CF-370H6

PROS: Good keyboard, quick recharge, 60MB drive standard
CONS: Poor tech support, small wide screen

The Panasonic CF-370H6 is a decent machine shot down by terrible technical support and marginal performance. It's a shame, because this unit starts you out with a generous supply of RAM (5MB) and a 60MB hard disk for a reasonable $3991. Another nice touch is a hinged screen that's easy to work with on an airplane seat-back tray; and the three-position brightness switch never slips out of adjustment the way knurled wheels often do.

Unfortunately, 2¼ hours of battery life is shorter than ideal. Worse yet, Panasonic's service isn't nearly as good as the machine it represents: There's no turnaround guarantee, and tech support callbacks are slow and unreliable. Moreover, when we finally managed to get answers, they were almost useless. Under the circumstances, we can't recommend the CF-370H6.

This Panasonic is a decent machine, designed to shoehorn into a tight work space. But technical support is a disappointment.

Tangent Model 320N

PROS: Excellent screen, fine price, fast
CONS: Short battery life, no internal modem, poor quality control

Tangent's Model 320N (made by Chicony) is the cheapest system here, as well as one of the fastest, and its $2867 price includes 5MB of RAM. However, that price does not include an internal modem because the system doesn't support one. Battery life is hardly impressive—under 2 hours—but both screen and keyboard are fine.

Unfortunately, we've seen far too many hardware problems with the Tangent and other Chicony-built units from vendors such as Micro Express—all three of whose notebooks failed our test suite. We finally managed to get one of Tangent's Model 320Ns through our entire gauntlet of benchmarks, but this sort of trouble makes us nervous. If you're considering a Tangent, you'll be glad to know that the support staff was knowledgeable and helpful, but we can't recommend this system until quality control improves.

Inexpensive and small, the fast Chicony-built Tangent suffers from questionable quality control.

The big Toshiba gets good marks for its long-lasting and environmentally safe nickel-hydride batteries.

Toshiba T2000SXe

PROS: Outstanding battery life, 10MB RAM capacity, good keyboard
CONS: Pricey, large, small screen

Toshiba's $4218 T2000SXe is one of the first notebooks to use the new power-packed nickel-hydride batteries, so you get 3 solid hours of portable power and a 1-hour recharge. What's more, nickel-hydrides don't suffer from the nickel-cadmium "memory effect": You don't have to drain them every couple of months to keep them at full rechargeability. The keyboard is well designed too, with fully dedicated page controls and function keys. And while the screen is small, it's also nice and sharp.

Sad to say, the T2000SXe's 8.7-pound traveling weight brings down its portability rating, and we had to spend quite a bit of time cutting through busy signals on the tech support line. Still, if you don't mind paying a premium price or lugging a few extra pounds, the T2000SXe is a solid choice from a solid company.

Zeos Notebook 386-20MHz

PROS: Excellent screen, extra battery and charger
CONS: Large, heavy, slow

The large, heavy Zeos Notebook 386-20MHz is a virtual twin of Everex's Tempo LX. However, this Zeos costs $3514—over $600 more than Everex's street price. But while Everex gives you *Windows* and a mouse, this Zeos comes with a 60MB hard disk, an extra battery, and an external charger, so you can top up one battery while you work from the other. Like its twin, the Zeos is fairly slow. The keyboard features standard placement of <Ctrl> and 12 dedicated function keys, but page keys are emulated.

Zeos's technical support is quite good, with its toll-free, 24-hour phone support 365 days a year. And the fact is, this is a good machine —that second battery boosts effective life to more than 5 hours. But because of the large price difference, we think the Everex version is more attractive.

Varying slightly from its heavy, slow Everex twin, the Zeos also has a great screen and excellent support.

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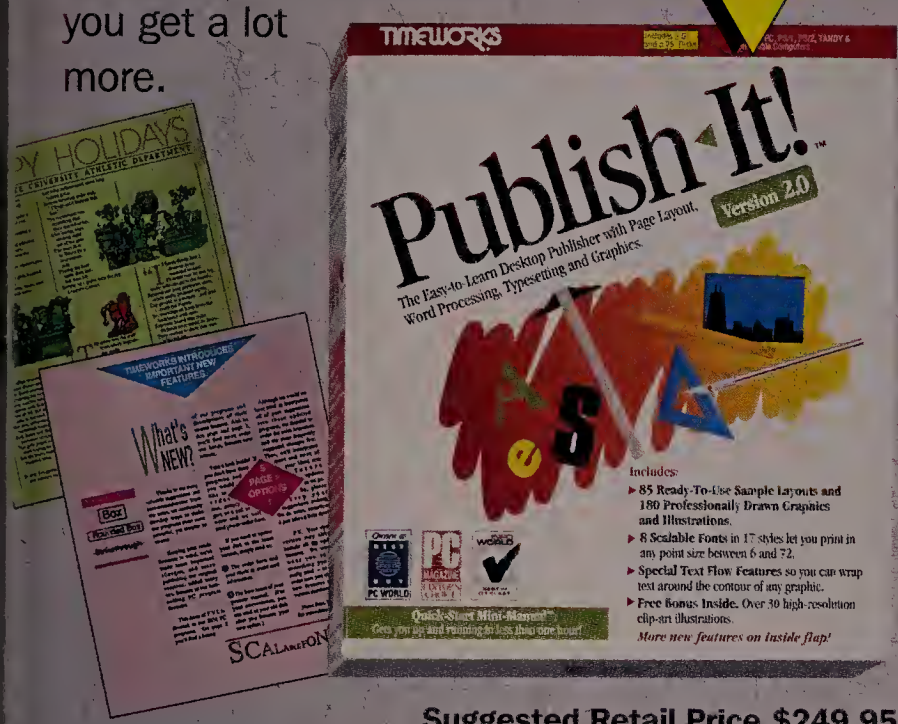

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Best of the Rest

20-MHz SX notebooks are taking over, and new machines are showing up fast. Here are 25 more to consider.

Model	Price[1]	Size (inches)	RAM capacity (MB)	Hard disk (MB)	Warranty (months)
Acer AnyWare 1120NX	$4120[2]	8.5 x 11 x 2	5	60	12
AmRel MLT386SX-20	$2795[2, 3]	8.7 x 11.6 x 2.3	5	60	12
Austin 386/SX20 Notebook	$2695[2]	8.7 x 11 x 2.1	5	60	12
Blackship 386SX-20 Notebook	$2495[4]	8.5 x 11.7 x 2	5	60	12
Chaplet NBA 386SX-20	$2927[5]	8.5 x 11.7 x 2	6	40	12
Core Pacific LP386SX-20	$2295[4]	9.3 x 11 x 1.8	16	60	12
Dataworld NB 320SX	$2995	8.5 x 11 x 2	16	40	12
Dauphin 1000 Lapbook	$3240	11.3 x 12.5 x 2.3	8	60	12
Dauphin 500-SX	$3240	8.3 x 11.7 x 1.9	8	60	12
Goldstar GS620	$3320[4]	8.5 x 11 x 2	4	40	12
Grid 1750	$5644[2, 6]	10 x 12.2 x 1.7	5	60	12
Hyundai Super-NB386Sc	$3994[2, 4]	8.2 x 11.7 x 1.8	5	40	12
Kris Master	$1899	8.5 x 12 x 2	16	60	12
Micro Express NB5620	$3820[2, 4]	8.6 x 11.8 x 2	5	60	15
MiTAC 3026E	$3199[3]	9.2 x 11.2 x 2	6	80	12
Mitsuba Ninja Notebook 386SX-20MHz	$3595[7]	8.5 x 11 x 2	16	40	12
Olivetti Notebook S20	$5595[4, 6]	8.3 x 11.8 x 2	6	60	12
Sharp PC-6641	$4797	8.5 x 11 x 1.8	6	40	12
Tandon NB/386sx	$3495	8.5 x 11 x 2	16	60	12
Tandy 3810HD	$4499[2, 6]	10 x 12.2 x 1.7	5	60	12
TI TravelMate 3000	$4496	8.5 x 11 x 1.8	6	60	12
TOPPCs NB5620	$2800[2]	8.3 x 11.8 x 2	5	60	12
Twinhead Supernote 20C[8]	$4498	8.5 x 11 x 2	8	60	12
ZDS MastersPort 386SL[8]	$5747[6]	8.3 x 12.4 x 1.8	8	60	12
ZDS MastersPort 386SX	$4647[6]	8.5 x 11 x 2	4	60	12

[1] With 4MB RAM, 1.44MB flappy drive, 40MB hard disk, intemal 2400-baud modem, DOS.
[2] With 5MB of RAM.
[3] With 20MB hard disk.
[4] Without internal madem.
[5] With 6MB af RAM.
[6] With 60MB hard disk.
[7] Includes mause.
[8] Uses 386SL low-pawer processar chip.

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Acer America
800/733-2237,
408/922-0176
Reader service no. 760

AmRel Technologies, Inc.
818/575-5110,
818/575-0801 (fax)
Reader service no. 761

Austin Computer Systems
800/833-3657,
512/454-1357 (fax)
Reader service no. 762

Blackship Computer Systems
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510/770-8674 (fax)
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Core Pacific Electronics
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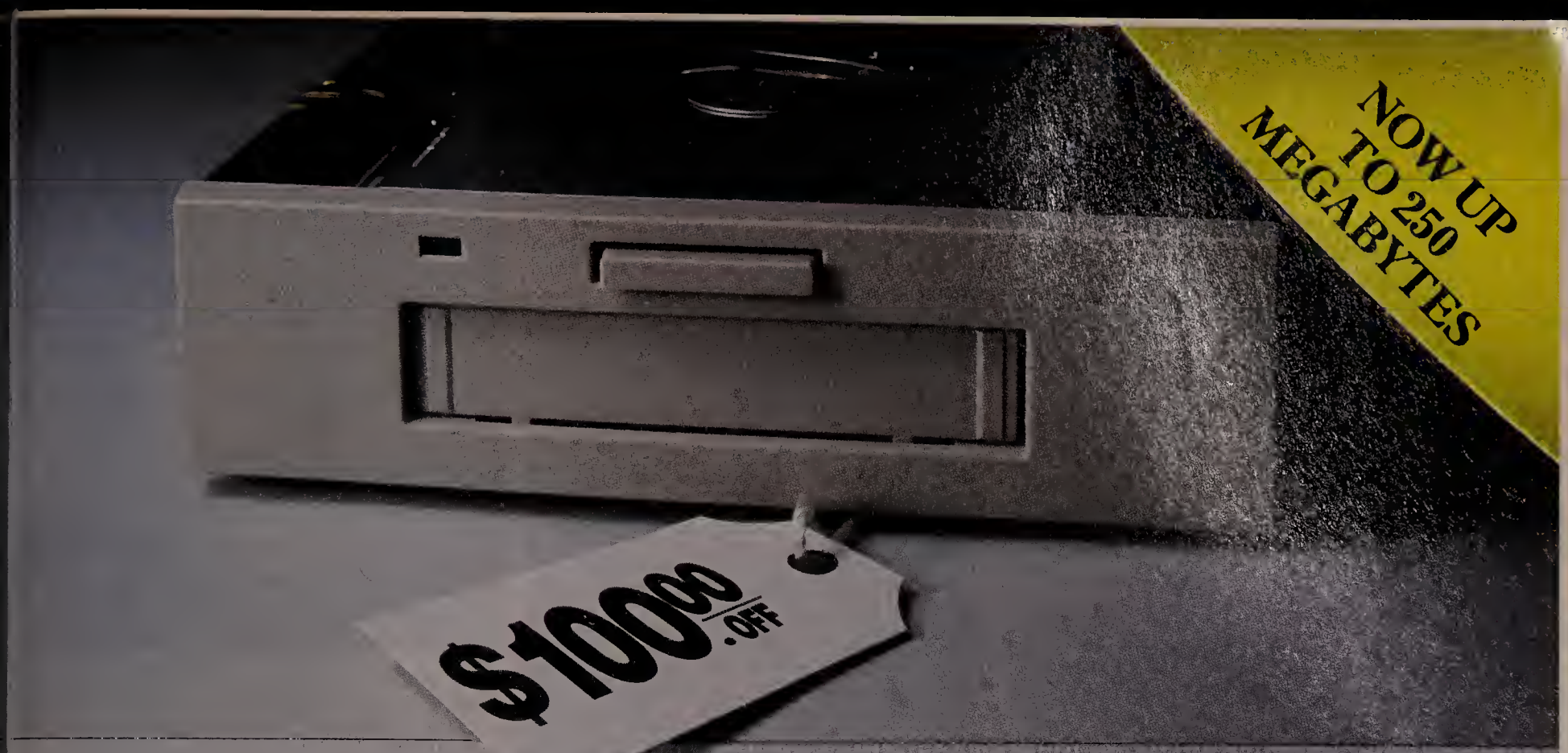

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We've just increased the capacities of our ArchiveXL® backup systems—and reduced the price by $100. So now you can get a complete, ready-to-roll, 250 megabyte system, without eating up your budget—for only $499. Or, choose our popular 120 megabyte system, for only $399.

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Either way, you get something no other low-cost system can offer—Maynard® quality.

With ArchiveXL, all the extras are built-in—so you get more for your money. It's the complete backup system, including software, connectors, mounting rails and faceplates, even a tape cartridge worth $28. Advanced data compression provides capacities from 80 to 250 megabytes. And features like high-resolution head positioning and rugged metal mount construction deliver years of dependable performance.

Our state-of-the-art QICstream® software is a snap to install. Easy to use menus let you quickly choose from a wide range of file-by-file backup and restore options, giving you all the flexibility you need.

Automatic unattended backup lets you backup anytime—even in your sleep. And ArchiveXL systems support Novell, 3Com, Token Ring and other networks with PC's, PS/2's and compatibles. Our 250 MB unit also operates under SCO XENIX.

Maynard's 48-hour replacement policy*, toll-free product support and 24-hour, on-line bulletin board service are more reasons why we say we're backing you in every way. So now you won't have to bite the bullet to get more bytes. Get the mini-cartridge system PC World said "takes top honors for speed and convenience"—ArchiveXL. From the world leader in backup systems. Contact your dealer—or call Maynard.

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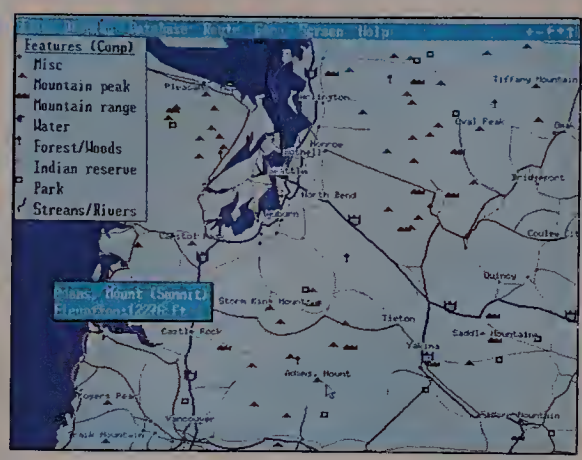
The Intelligent Road Atlas For Your PC!

Planning a vacation? Heading out on the road on business? Now there's a system that helps you plan any road trip for fastest, prettiest or most convenient route — with hundreds of up-to-date, color maps right on your computer screen.

Clear, detailed maps that can get you anywhere in the United States that you want to go. Just tell AUTOMAP where you're going, when and where you'll be starting from, what areas you'd like to avoid, what areas you'd like to visit on the way and how you like to drive. It's fast, fun and informative.

Select your starting point, end destination, and areas to visit and let AUTOMAP create a detailed map of your next trip!

AUTOMAP's powerful intelligence takes over from there. Instantly, it searches its massive database of over 300,000 miles of roads and highways for the best route to meet your requirements. It even gives you a list of alternative routes if you decide you'd like to wander a bit. AUTOMAP also gives you a list of "places" from over 50,000 in its database. It's like having a travel guide pointing out the very best there is to see and do. Business travellers won't have to worry about being unfamiliar with new territories — just a quick session with AUTOMAP and you'll know exactly where you're going.

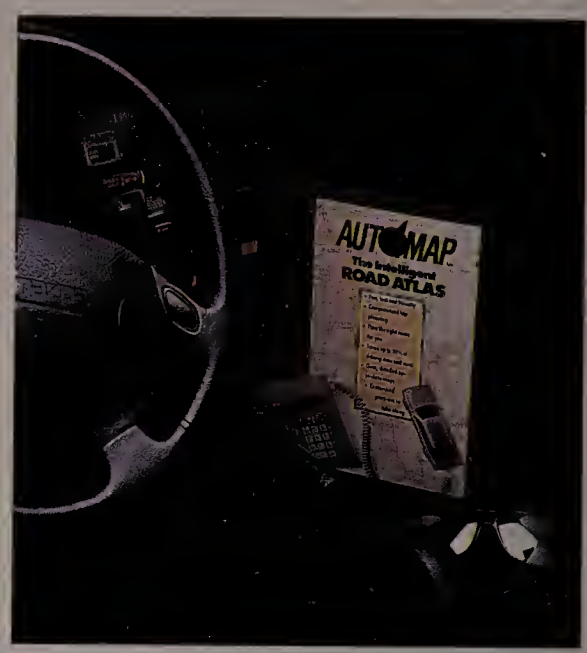


AUTOMAP's driving instructions tell you which roads to travel, how far to go, and approximate traveling time.

AUTOMAP allows you to view your entire journey as a full color map and gives you all the details on mileage. Zoom out to see the entire region, or zoom in to see every detail. AUTOMAP's driving instructions list all the roads you'll be traveling, exactly how far to go, exactly where to turn and even the signs to look for! These maps and directions can be viewed on your screen and printed out to refer to as you need them.

Government Highway Data.

AUTOMAP uses data with the renowned accuracy of government sources. It has been designed to remain accurate with constant updates of new maps and details as they become available. AUTOMAP has



proven itself with the most demanding businesspeople and vacationers. It's helpful and convenient, but more importantly, AUTOMAP will save time, money and frustration. In fact, surveys show that AUTOMAP can easily save up to 20% in driving time and related costs. There's even a built-in quiz to test your knowledge of geography.

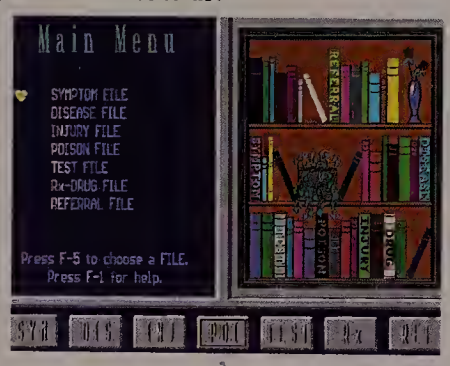
AUTOMAP INCORPORATED

AUTOMAP

BD4098-5 **AUTOMAP** 5½" **$79.95**
BD4098-3 **AUTOMAP** 3½" **$79.95**
Hercules, CGA, EGA, VGA, 512K RAM, hard disk, mouse recommended.

Complete Medical Advisor for Your PC!

Do you know how to tell if your child has chicken pox, the mumps or a more serious condition? Do you know what to do if your child accidentally ingests a household cleaner? Do you know what to do in the event of a scuba injury? Your family's health is your responsibility. If an accident occurs, every minute counts — you need to know instantly what to do, and what not to do.



Schueler's Home Medical Advisor is an easy to use, interactive home medical reference system that can answer your medical questions (for both emergencies and non-emergencies) in a number of important categories. Created by a team of Board Certified Emergency Physicians in collaboration with graphics professionals and technicians, The Home Medical Advisor covers all age groups. It is colorful, informative and fast, putting volumes of medical and health information in a fast-access format. All information is easy to understand and emergency instructions are clear and concise.

The Symptom File. From The Home Medical Advisor's Main Menu select Symptom File and view a list of the most common symptom complaints by patients. This file will quickly formulate up to 400 potential diagnosis, employing over 1400 questions and 600 color VGA illustrations (the graphics are incredible!). The Symptom File includes a listing of 70 of the most common chief complaints, often the worst, or most bothersome symptom. Home Medical Advisor will ask key questions and arrive at possible diagnosis from its vast knowledge base.

The Disease File. The Disease File provides extensive information on over 450 diseases with along with discussions of their causes, common symptoms, physical evaluation and treatments. There are also special sections on pediatrics and problems unique to women.

The Injury File. A listing of over 200 common injuries and treatments. Everything from gunshot wounds, burns, cuts and bruises to acute mountain sickness and broken bones is indexed by body part for fast reference.

The Test File. Diagnostics have advanced by leaps and bounds over the past several years. The Home Medical Advisor's Test File provides a listing of over 140 of the most widely used medical tests. Each section explains exactly how each test is performed, why it is used, its limitations, risks and benefits. Includes section on "What to expect."

The Drug File. The list of pharmaceutical agents grows longer every year. The Home Medical Advisor includes a listing of over 600 medications (prescription and nonprescription) with exhaustive information on their uses, potential side effects and drug interactions.

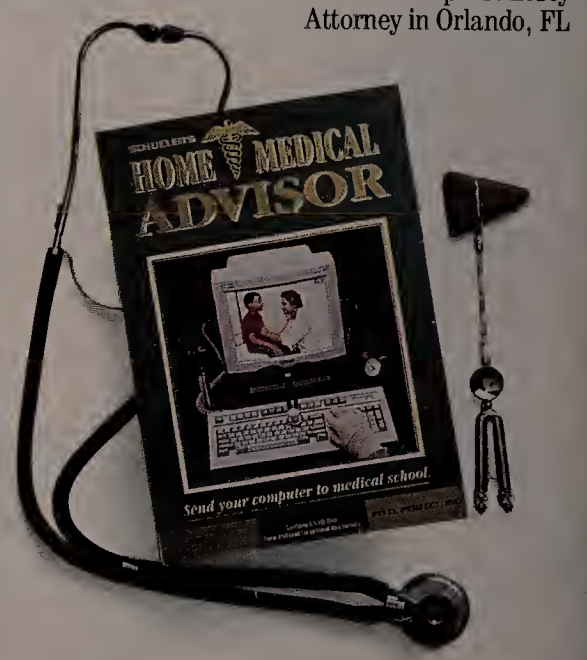
The Poison File. Although many poisons today are supplied in child-proof containers, accidents can happen. The Poison File contains a list of over 500 poisonings and exposures. This file will tell you exactly what to do and who to see for a variety of plant, medicinal and household ingestions.

The Referral File. When you register your copy of Home Medical Advisor, you'll be eligible to receive a listing of Board Certified physicians, hospitals and specialty clinics in your area. Registered users will be eligible for updates (every 10-12 months).

Complete and easy to understand, this is one of the most important NEW titles on the market today.

"The program was interesting and detailed enough to fascinate me, yet easy enough for my eight year old to run on his own."

—Ralph C. Losey
Attorney in Orlando, FL



Home Medical Advisor

BD 3860 **Home Medical Advisor** 5¼" **$69.95**
BD 3860 **Home Medical Advisor** 3½" **$69.95**
Hard drive required, EGA 256K or VGA.

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Easily Create Magnificent 3-D Charts!

3-D CHARTS TO-GO Makes Numbers Sing in 3 Dimensions.

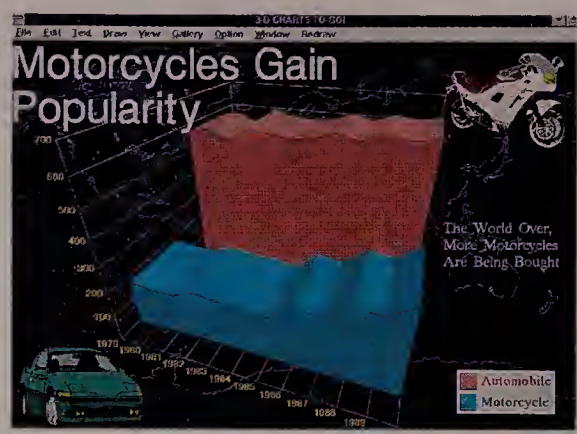
Why settle for two-dimensional charts when you can create explosive 3-D charts in just seconds with 3-D CHARTS TO-GO? This easy-to-use system will produce 3-D Pie, Bar, Area, Text and Line charts instantly, using your existing Excel numbers through its advanced clipboard. The innovative "split-screen" feature allows you to see both the data and the chart together for fast editing — you don't have to flip-flop between two applications when you create charts. And 3-D CHARTS TO-GO will give you three different chart views: Perspective, Isometric and Oblique.

Control Size, Angle, Color, Type and Reproduction Quality.

3-D CHARTS TO-GO allows you to interactively control the size of your charts — so you see the adjustments as you make them! Sizing is as easy as clicking to get the exact size you need. Click again and adjust the viewing distance, click once more and change the rotation angle to add unique perspective to your chart. This rotation-angle control allows enormous flexibility in presenting your charts so that the data is clearly displayed. Quickly select from 17 different chart drawing patterns and 8 foreground and 8 background colors. Want to get crazy? Click to create a host of available special effects on the background and shadows to enhance the three-dimensional effect.

There's more, like the ability to select your choice of chart quality: Draft, Fine Black and White and Fine Color. And 3-D CHARTS TO-GO gives you creative freedom when adding type to your charts. Your chart's title, subtitle, descriptive lines, labels, legend and footnotes can all be individually sized, colored and employ different fonts.

What makes 3-D CHARTS TO-GO even more impressive (and useful) is its ability to use data from Excel (and many other Windows-based applications). You'll quickly export numbers to 3-D CHARTS TO-GO without exiting Excel. You can easily merge up to 10 individual charts, print them together and perform fast, accurate data comparison. If you're a PageMaker user, you can enhance documents containing financial information and grids following the same simple steps. 3-D CHARTS TO-GO supports .WMF, .PCX and .BMP file formats.



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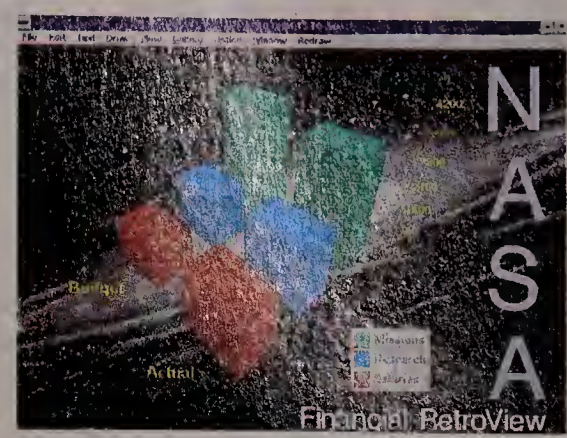
Requires Windows 3.0 and 640K.



Make Your PC Run up to 600% Times Faster!

Trapped deep within the architecture of your computer lies an enormous untapped potential for speed. Unfortunately, this vast resource has been neglected because no one could devise a way to unleash it. Until now.

FAST! is the brilliant caching system that actually increases the speed of your computer by up to 600% times! Simple to install, a snap to use, this software solution can make an XT with expanded memory outrun a full-blown 386! In tests, we loaded a 386 with FAST! and we almost blew the doors off the lab! (Keep reading for complete details on the head-to-head lab speed tests.)

How Can It Be Possible?

You're probably wondering exactly how this technology works. How can software have such a shattering impact on my computer? Although the authors are keeping the secret to themselves, they have shared information about where the slowdowns are within your system, where the speed is trapped and what has to be done to harness it.

They do tell us specifically, that the biggest system slowdown for your system is waiting for disk reads. When you use an application, you use it in "chunks" of various sizes, depending on the functions you are performing. Sure, you load it all at once, but it's used in bits and pieces. Your system must read back and forth, searching for these chunks of programs as they are needed by the application. Switch to another function, and the system must scramble again to find the required chunks.

A Perfectly Logical Solution...

One of the keys to the FAST! design is the addition of "intuitive logic" to the technique of caching, so your system actually anticipates what your CPU will be seeking and reads the information directly from the hard disk (or floppy) into a special buffer created within your RAM. This information is, in reality, retrieved before the system asks for it!

As a result, your CPU spends no time waiting for disk reads, so processing can be done as fast as the system is capable — faster than you've ever seen it! The more disk-intensive the application is, the more dramatic the increase in speed can be achieved using FAST! Database, spreadsheet and complex CAD systems, word processing, data transfer and more will achieve maximum response with FAST!

FAST! is also good for your system. By reducing the chaotic searches for data on your hard disk, it actually extends its life, reducing the damaging effects of constant wear. It's good for your software applications because they'll run leaner and faster, so you'll be more productive.

On a standard data transfer performance test, FAST! is 18 times faster than a standard AT — and 5 times faster than the leading competitor. In fact, an IBM XT with FAST! is faster than a Compaq DeskPro 386!

Don't Buy More Equipment!

You could spend thousands trying to achieve the speed required for truly efficient computing. Items like high-speed drives, turbo boards — even complete system upgrades try to overcome your system's inherent slowdown — waiting for disk reads.

What FAST! Can Do for a 386...

FAST! will deliver spectacular results on your IBM PC, XT, AT and PS/2, but imagine how much faster the "new generation" of ultra high-speed processing technology like the Compaq 386 or Intel's 386 Above Board will run using FAST! — they instantly leap into a new computing class!

FAST! Under Windows 3.0!

Charles Bermant, author of The Windows 3.0 Comparison, wrote "One solution (to the speed problem) is to replace Windows' disk cache, SMARTDRV.SYS, with another cache. One such program, FAST!, has made my recent Windows life a lot easier. FAST! makes everything appear faster."

On a standard Drive Evaluation Comparison test, FAST! increased performance over 1700% — and 550% over Windows' caching software!

Run your word processor, database, spreadsheet – faster than you thought. Your PC was designed to run "fast," but DOS and your hard disk combine to slow your computer down – often, to a crawl. Don't buy hardware – just install FAST!

New Version 4.0!

SAVE $50!

FAST!

BD3460-5 FAST! 5¼" $79.95

BD3460-3 FAST! 3½" $79.95

FAST! will run on the IBM PC, XT, AT, PS/2 and compatibles with 128K RAM and DOS 2.1 or greater. Supports fixed disk systems, and supports conventional, expanded or extended memory.

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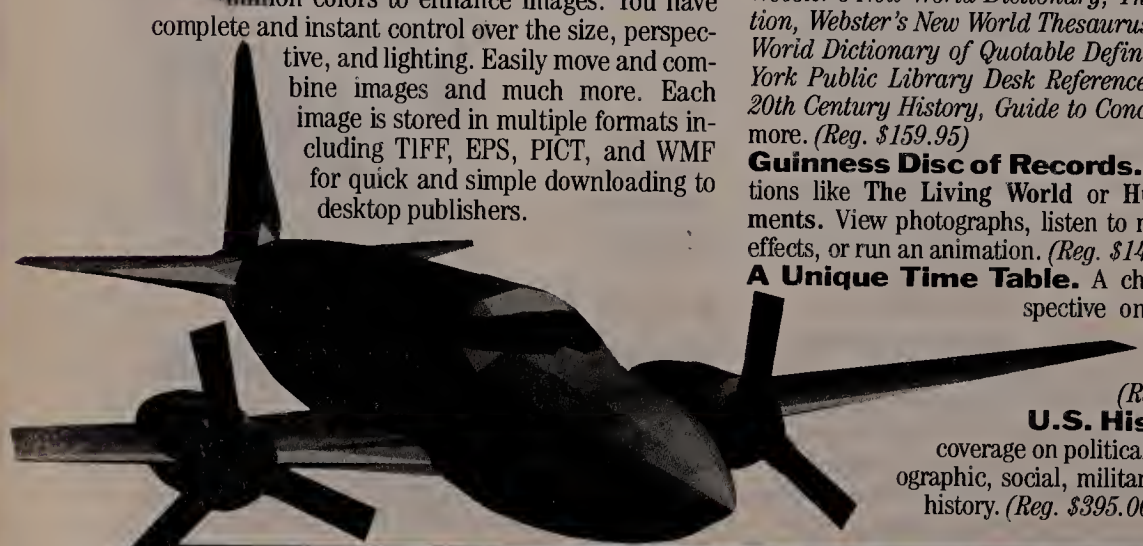

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One other note: new CD-ROM titles are being released every day! Tiger will have them in stock as you read this, so call us — there's probably one available for your particular area of interest.

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GRIPS 2. What's a Grips? It's an unbelievable collection of Government Raster Image Processing Software (GRIPS) that contains a vast variety of public domain high resolution raster image and display software. Includes interplanetary, 3-D, landsat, SLAR, color relief maps, images, topographical and landsat maps, fractal images and more! Incorporate them into your presentations for high impact. Also includes thousands of NASA, Jet Propulsion Lab and US Geological Survey images! *Retail price $49.95.*

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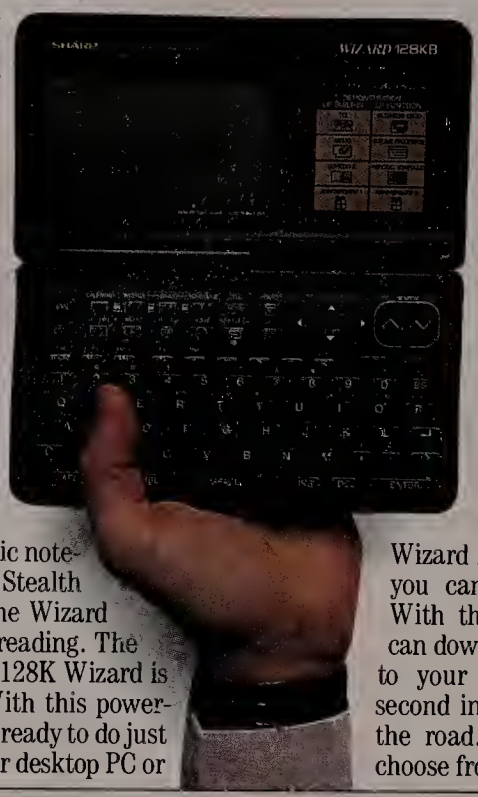
THE SHARP WIZARD MISUNDERSTANDING!

The whole thing started a couple of years ago. From Sharp minds came the powerful little organizer that took businesspeople by storm, giving them a new way to take care of their information.

Eventually, these Wizards began replacing bulky laptops — then they began to replace even the slimmest notebook PCs. Now, you see Wizards everywhere!

When you think about it, a PC is often overkill for road trips — what you need on the road is a small, fast, convenient machine designed to gather information now. The Wizard is the perfect answer, providing all the functionality of a PC with a built-in spreadsheet, word processor and other amazing organizational tools. Just touch an icon and the Wizard is ready to go! The Wizards feature huge (40 character by 8 line), super-crisp screens, solid QWERTY keyboards, full compatibility with your desktop PC or Macintosh -- and with the new OZ-8200, you'll pack 128K of memory!



But the Wizard remains misunderstood. Everyone thinks that it's just an electronic notepad. That's like saying that the Stealth bomber is just an airplane. The Wizard does so much more — so keep reading. The real news is that the OZ-8200 128K Wizard is in stock and ready to ship. With this powerhouse in your briefcase, you're ready to do just about everything you do on your desktop PC or Mac. And the Wizard's sleek design makes it the perfect traveling companion (unlike the excess baggage of a laptop or notebook). It's about the size of a checkbook, weighs almost nothing and runs on standard CR-2032 batteries.

The misunderstanding continues. Pop in the Wizard Money Planner software card and your Wizard becomes a powerful (and full featured) financial calculator. The North American City Guide includes over 12,000 detailed entries about 23 cities: New York, Miami, San Francisco, Toronto, Montreal, Los Angeles Atlanta and more. The 8-language translator helps you with words and word phrases in several categories: air travel, sightseeing, hotels, restaurants and more. The spreadsheet software is completely 1-2-3 compatible and the thesaurus/dictionary contains over 42,000 words and 500,000 synonyms. Oh, and by the way, if you get a free moment, slip in Tetris, Hatris, Box Jockey or Backgammon for some fast-paced fun!

There's an optional modem, printer, fax and a slew of software cards that turn the Wizard into a fully funtioning office, so you can conduct business anywhere. With the optional transfer cable, you can download information from your PC to your Wizard and have up-to-the-second information when you take it on the road. There are several models to choose from, one for your business life.

Something for Nothing!

Buy a Wizard OZ-7200, OZ-8000 or OZ-8200 and **get a handsome Leather Case and Video Guide FREE!** *(a $69.98 value)* Buy any 2 software cards — **get 1 software card FREE** *(must be of equal or lesser value)!*

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World's Highest Quality, 256-Gray Scale Hand Scanner!

Logitech brings you the ultimate in scanned-image clarity and detail...

We've gotten used to the limitations of scanned images, I guess. We're not surprised when a scanner produces an image that's not bad — but not great, either. We sort of expect low-quality. Which is why the ScanMan 256 from Logitech blew the lid off of our lab the first time we slid its ergonomic case over a black and white photo!

This incredible new instrument is utterly amazing, capable of professional-quality scans every time for photos, detailed line art, monochromatic images and more. It delivers 256 levels of gray — not just 64, or 16 — but 256 individual levels for ultra high quality. They're bright, crisp, clean, highly detailed and require no touch up whatsoever.

Superior image construction and unmatched clarity makes editing and manipulating your scans simple and precise. The secret is the innovative new red scanning beam. It produces 7 times more light (the critical factor in capturing minute detail and sharp contrast) than other scanning light colors. And the ScanMan 256 is built like no other scanner we've seen. It's balanced, so you can move at a consistent speed for the best possible reproduction. And only the ScanMan 256's Image Memory Manager swaps image data between your RAM and hard disk, so you can quickly work with even the most memory-intensive images.

The Scan Itself...

With most scanners, the act of moving across the image is less than scientific. Move too slow, you get muddiness, move too fast and you lose detail. If you don't scan in a perfectly straight line, the lovely young lady in your photo scans like something out of a Picasso painting. The ScanMan 256 eliminates the guesswork, trial and error and frustration.

The ScanMan 256 features a scanning speed indicator. Turn it on and it's green and ready to go, begin scanning a little too quickly the light turns yellow, then red if you're moving too fast to capture the image properly.

Scanning For Desktop Publishing

Using the ScanMan 256, you not only get great scanned images, you can do all kinds of very creative things with them, like create magazine-quality halftones, lighten or darken your images, adjust the contrast, reverse them, resize and rotate them, make line art out of photos and more.

The ScanMan 256 includes Ansel,™ an easy-to-use image editing software system that allows quick retouching, speedy zooms, great special effects and a host of image-manipulation features. Ansel is one of the most sophisticated packages we've seen, and a must even as a standalone package, but it's included FREE when you buy the amazing ScanMan 256.

Clean OCR Scans...

Here's where the advanced technology of the ScanMan 256 shows what else it can do. If you use OCR (optical character recognition) software to scan text, you know the "clean-up" factor you're faced with. The ScanMan 256 outperformed all other contenders in our OCR testing using a page of 11 point, Century Schoolbook type with 12 points of lead. It produced usable text with fewer errors, scanning faster than any other hand or full-page scanner.

The ScanMan 256 is a complete system, compatible with all leading desktop publishers and fully guaranteed by Logitech.

Also Available: The Cordless Mouse!

The MouseMan is a cordless, three-button, radio-controlled mouse! No cables, no line-of-sight positioning! The radio receiver can be placed anywhere — even under your desk — and still allows you to work with precise movement. It's fully Microsoft compatible and includes Mouse-2-3, designed for maximum Lotus 1-2-3 productivity.

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ScanMan: *PC with 286, 386 (386 SX or 386 DX) or higher processor; MS- or PC-DOS 3.1 or higher; Microsoft Windows 3 or higher; 640K conventional and 256K extended memory (1 MB RAM); one floppy disk drive and a hard disk; CGA, EGA, VGA, 8514/A (Super VGA) or Hercules graphic card, or compatible video graphics adaptor and appropriate monitor (VGA or higher graphic adaptor recommended for gray scale display).*

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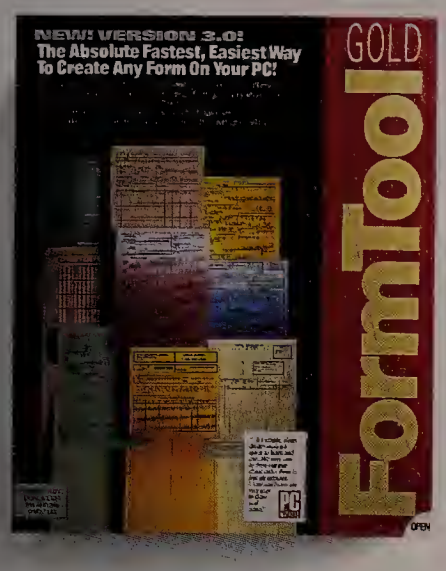
It's easy to see why FormTool is the best-selling forms package in the world. It's the fastest, easiest way to create, edit, manage and print custom, professional forms for immediate information gathering.



The ability to quickly gather data and put it to work is critical to corporate information flow. FormTool's "Intelligent Line Drawing" and its hardware compatibility make it an indispensable tool for businesses of any size. That's why FormTool has found a home in well over half of the Fortune 500 list, along with thousands of educational institutions, government agencies, hospitals and financial organizations around the world. They've discovered FormTool's productive power.

Unlike its competitors, FormTool doesn't require additional memory, a graphics card, color display, mouse or scanner. It runs beautifully on anything from an XT to a 486. FormTool now supports hundreds of dot-matrix, letter-quality, daisywheel, thermal as well as Hewlett-Packard printers, and new support for PostScript lasers.

Draw Forms Fast.

FormTool streamlines the PC's ability to draw forms. Lines of any weight, boxes of any size, grids of any complexity and more can be quickly drawn with just a few keystrokes. If a grid isn't quite right, one keystroke re-draws it to meet your exact specifications, then displays it on the screen with our WYSIWYG display. Zoom in to see a close-up of your form, then zoom out for the full page view. If you spot a problem, quickly make the revision, preview it again — then print it.

This preview capability combines the advantages of a graphics-based, on-screen display with text-based, lightning-fast processing times and makes FormTool even easier to use — and enhances creativity and accuracy in the design process.

Instant Revisions.

FormTool's ability to make instant revisions to your forms gives you the flexibility to create exactly the proper form to meet the requirements of your work flow. Ideal for users of any experience level.

Enter Text in Seconds.

To handle text, FormTool contains a forms-oriented word processor that allows you to move quickly through the form inserting captions, instructions, word-wrapped text and special symbols, and characters. FormTool will enter your text into position automatically.

An All New Forms Manager.

And FormTool Gold contains an all new Forms Manager that makes organizing, retrieving and archiving forms faster and more efficient.

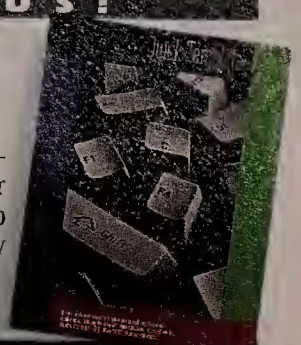
Includes a built-in backup and restore, the ability to instantly view forms from a list on your screen and a new set of features that allow you to "move," "copy," or "delete" forms from the Forms Manager.

FormTool's Forms Manager also includes hard disk directory support, allowing you to store forms anywhere — or you can assemble form sets in just seconds using the sleek new menu system.

BONUS!

FREE QUICK TEMPLATE When you buy FormTool Gold!

Quick Template is the perfect replacement for your lost plastic templates. Pop up a list of every special key from within FormTool Gold. *A $49.95 value!*



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IBM PC, XT, AT, PS/2 or compatibles with 265K. Floppy or hard disk, supports all color or monochrome monitors with or without graphics cards and virtually all dot-matrix printers, daisywheel and laser printer.

Turn Your PC into a Fax Machine!

Your PC is the perfect fax machine: it easily creates documents to fax, has powerful printing capabilities and contains plenty of storage space. It allows you to automatically transmit faxes at a certain time. You can send crisp, clean facsimile documents right from your desktop. "With Faxography, included free with all Fax96 products, you can fax documents with 648 different fonts, graphics, special effects and more. Fax96 automatically previews the document on the screen so that you are faxing the file just as you would print it." Of course, using your PC would make it much easier to manage and archive your faxed communications. And, using your laser or dot-matrix printer, you can receive faxes ON PLAIN PAPER. All you need is the compact, affordable little board known as Fax96.

Full 9600 bps Group III Facsimile Capability. In the late 70s, fax machines took 6 minutes to transmit a page. That was fast then, but way too slow today. Modern Group III fax systems transfer a full page every 10 to 30 seconds! Fax96, handling faxes at 9600 bits per second, puts the latest technology to use for your benefit — faster transmissions meaning lower phone bills.

Background Receive Operation. Fax96 is always ready to receive. Run WordPerfect, Lotus 1-2-3, whatever you like. When a fax arrives, Fax96 answers your phone and stores the incoming fax on your disk. A small window pops up letting you know that it has arrived. You can then display the fax on your screen or print it on your printer.

Advanced Sending Operation. However you want to send, Fax96 will automatically handle it for you. Broadcast the same fax to several people that you easily select from your Fax96 phone directory. Select several faxes to send out at the same time, thus sending multiple files. Or schedule faxes to be sent in the wee hours of the morning when rates are at their lowest.

If you want to use your own scanner program, simply save the image as a .TIF or .PCX file, then send it from Fax96. Don't own a scanner? Here's a trick — have a friend fax you the image. Then you can fax it to others.

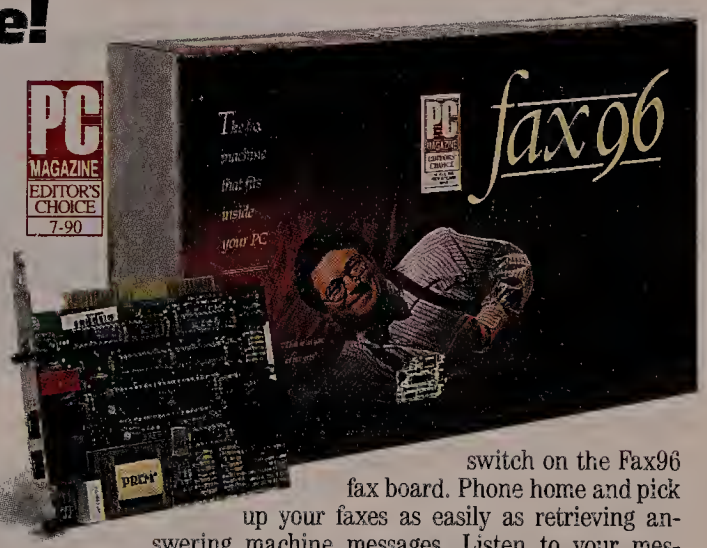
Loads of Special Features... The list of features that Fax96 gives you goes on and on. Automatic transmittal cover-sheet generation with enough "comments" lines to be a short fax all by itself. Automatic redial in case the called number is busy. An automatic log of sent and received faxes. Printing compatibility with lasers and dot-matrix printers. And perhaps best of all, familiar "push button" fax machine look and feel. You'll know instinctively how to operate Fax96.

Free! Faxography. Fax it fancy with big fonts, little fonts, picturesque graphics and more. Faxography will convert anything that can be printed on an Epson LQ printer to a fax. Simply set up your word processor, or any application, to use the Epson LQ printer, then print to a disk file (you don't need a printer at all). Faxography will do the rest. (Other boards emulate a 9-pin Epson. Faxography emulates the hi-end Epson 24-pin for better quality images.)

Fax96 With Powerful Modem. Add a high-powered, 2400 bps modem to Fax96 for a dynamite PC communications combo. If you're short on slots or COM ports, this is a must. Both fax and modem fit on one half-size board. The Fax96 with Modem also supports full background send and receive.

And Frecom is proud to include Comit software to run this modem. Frecom tested all the modem software around and found Comit to be the tightest, fastest, easiest to use, and the only one with MNP 2, 4, 5 and 7 built in — the best transmission protocols around. You don't have to pay extra for MNP hardware.

Fax96 With 1-Liner. This is the same product as Fax96 with two extra high value features – 1-Liner and FarFetchFax. The 1-Liner is a built-in voice/fax switch on the Fax96 fax board. Phone home and pick up your faxes as easily as retrieving answering machine messages. Listen to your messages, then enter your FarFetchFax and tell Fax96 where to send your faxes via touch tone telephone. You can also run programs while receiving faxes.



New! The Fax Window. Now you can fax from Windows as easily as you print! Create fantastic faxes in Word for Windows, Ami Pro, even Corel Draw — then print to the Fax Window instead of your usual printer. Fax Window runs totally in the background, taking full advantage of Windows' multi-tasking capabilities. After you select "Print...", a dialog box appears prompting you for a destination fax number, a scheduled time to send, and comments for the cover letter.

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Fax96

BD6240 **Fax96** **$149.00**
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Requires XT or above, 640K memory and hard disk. Fax Window requires Fax96 with Modem.

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The First Piano That Teaches You How to Play!

(...as Easily as Playing Super Mario Brothers!)

The Miracle Piano Teaching System Uses Nintendo or a PC to Teach Anyone to Play!

I remember being forced into taking piano lessons as a kid. The repetition, the drills took all the fun out of it — I eventually quit and have regretted it ever since. Now it's my turn to decide on piano lessons for my own kids. I introduced my nine-year-old, a self-proclaimed Nintendo master and junior PC hacker, to the Miracle Piano Teaching System about four months ago. His first question was "How do I fire the weapons?" Wise guy.

I left him alone with the Miracle and waited to hear something. Ten minutes later I heard Mary Had A Little Lamb, then Chopsticks and then the theme song from The Jetsons. I rushed back to his room and found him with that look on his face — the same look he gets when he reaches a new level in Zelda.

The Only Self-Teaching Piano.

The Miracle Piano Teaching System can teach anyone — child or adult — to play the piano with a series of progressive, customized lessons. The Miracle quickly connects to a Nintendo or PC and includes a Nintendo cartridge that combines an advanced MIDI keyboard with full-stereo sound and brilliant on-screen graphics. In no time at all, students of all ages will learn and perform left and right handed melodies — while having a lot of fun!

There are exercises, musical pieces and drills (cleverly disguised as games), that teach hand positions, notes, fingering, rhythm, scales and more. The Miracle can be quickly set up for any age or expertise, and customizes itself to move the user along at a comfortable pace.

Unlike conventional piano lessons, The Miracle eliminates boring, repetitive routines. The super-creative, artificially intelligent software quickly teaches the basics and builds on them in very entertaining ways. And that makes all the difference.

The Keyboard.

Dazzling music! Spectacular effects! Booming orchestras — all created by you — the Miracle keyboard — and a NES. As a stand alone instrument, The Miracle rivals the music industry's most sophisticated MIDI consoles. The 49 full-size keys are velocity sensitive, so you can learn to play utilizing true piano expression. You also get a foot pedal, which controls the length of time each note is sustained, and stereo earphones.

The Miracle can produce sounds from its library of over 100 instruments, sounds and effects programmed by a leading motion picture sound designer. To produce its superior acoustics, The Miracle uses sampled (digitized) sounds, and it can be connected to a home stereo system.

The Miracle is not a toy (but don't tell your kids!). It's so ingenious, it can teach anyone — at any age — how to play piano. The Nintendo cartridge and PC software contain exercises specifically designed for adults, too. You don't have to know anything about the piano, you don't have to read music, and you can have a lot of fun! Normally, adults have a tough time learning something like the piano, but with The Miracle, it's easier because it moves at whatever pace you're comfortable with.

The Miracle Software for Nintendo.

Finger Numbers/Note Names – Used in the early lessions, this Activity allows you to play without knowing how to read music.

Pitch Practice – This Activity teaches the notes and fingering of a piece of music and familiarizes you with the hand position changes.

The Shooting Gallery – This Activity is an arcade-style game that helps you associate keys on the keyboard with notes on the staff.

Rhythm Practice – In this Activity, you tap out rhythms using only one key, concentrating on *when* and for *how long* you press that key.

THE SOFTWARE TOOLWORKS

Miracle

BD3776 Miracle for PC 5¼" & 3½"	$399.00
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This innovative program brings the entire globe to your computer screen, combining a complete atlas, almanac and world fact book into one exciting, informative package. You'll have instant access to over 200 fully-detailed VGA maps, ocean maps and useful international information on 270 topics in 11 categories. You'll explore the geography, people, government and economy of any nation on Earth, including such details as climates, population, language, labor force, military strength, industry, highways and more.

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World Atlas is an ideal reference tool for travelers, educators, business people, librarians and students. With just a couple of keystrokes maps and data are on your screen.

You don't need to learn lengthy commands. Just point to a country on any index map, click — the desired map appears instantly. From there, simply select specific information and statistical maps for individual countries from sleek, drop-down menus. Easily print customized reports mixing maps and text — even export maps to desktop publishing programs.

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More than an almanac, The Desk Reference is a compilation of the most frequently sought facts at the world's busiest public library. This incredibly handy software resource allows you to explore multiple entries simultaneously for fast cross reference and perform easy cut-and-paste directly into your document. It's equipped with a streamlined table of contents and indexing system so you'll spend no time at all finding what you need. And all of this information requires just 20K.

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IBM PC or compatibles with 640K. DOS 3.1 or higher. hard drive required.

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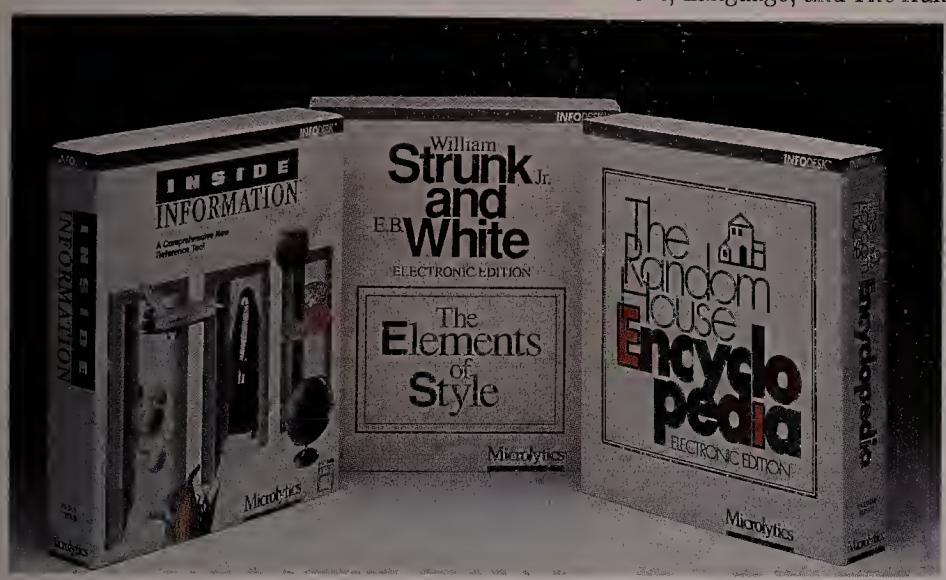
Inside Information

This new Desk Accessory is a comprehensive reference tool which organizes the English language into logical Categories of defined words. Far more than a dictionary or thesaurus, INSIDE INFORMATION lets you quickly and easily explore any of seven general Classes: Nature, Science & Technology, Domestic Life, Institutions, Arts & Entertainment, Language, and The Human Condition. These Classes contain 20 Subclasses, 125 Categories, and 700 Subcategories.



Categories are defined by subject matter, such as Chemistry, Law or Music — or by a common property, such as Colors, Tools, Verbs of Motion — or even a specific usage, like Insults, Slurs & Epithets.

Dig deeper into each Class in three different ways: outline view, graphic view or tree view. The reverse dictionary lets you type a few descriptive words then see a listing of appropriate terms and definitions.

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Reviewer's have called it "...the best of its kind" and raved, "The work remains unparalleled, direct, correct and delightful." Now **The Elements of Style** is available for your Apple Macintosh or IBM PC compatible computer.

Based on an original work by William Strunk, Jr., a Professor of English at Cornell University, this update third edition, prepared by noted writer and grammarian E.B. White, has become a classic of conciseness. It's the ideal tool to make your writing crisp, succinct and powerfully effective.

Anyone who needs to communicate effectively in writing will find *The Elements of Style* packed with specific, pertinent examples to improve writing style and structure. It's and easy-to-access educational reference work for the rules and principles of correct English usage. Includes seven rules of usage, eleven principles of composition, several matters of form, a list of often misused words and a style guide.

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So fast and easy — you'll be touch typing with speed and accuracy in just a few short lessons! Mavis Beacon Teaches Typing! is the premiere touch-typing self-help program that uses carefully planned lessons and drills — perfect for beginners, or typists who want to improve their speed and accuracy.

NEW! Version 2.0.

Mavis Beacon Teaches Typing! has been the world's leading computer typing instruction program for several years. With new graphics support, a 10-Key Teaching Mode, improved lessons and numerous other new features, the world's premiere typing instruction program just got better. And, Mavis Beacon is now available in a new Microsoft Windows version.

In addition to supporting CGA, Hercules and text modes, Mavis V2.0 now features EGA/VGA 16-color, 320×200 graphics plus Custom Color Palette. And the new 10-Key Teaching Mode will help users master the numeric keypad.

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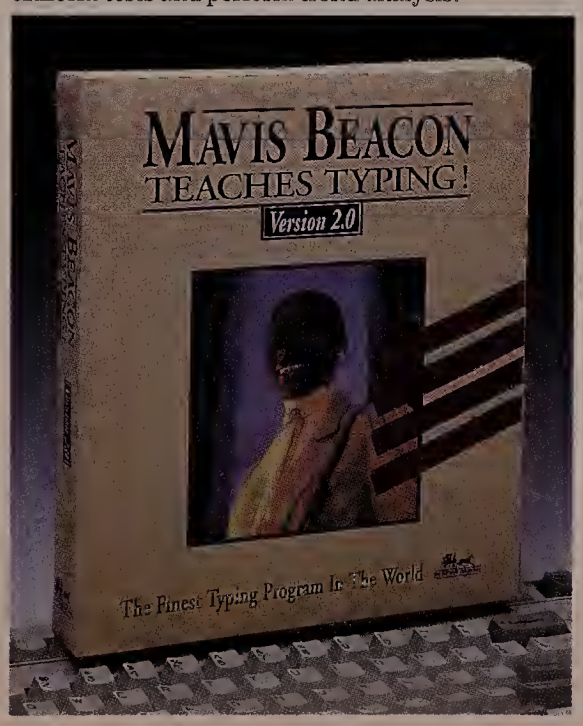

Mavis Beacon vs. the Competition

Features	Mavis V2.0	Dvorak	Typing Tutor
Graphics			
EGA/VGA 16-color	YES	Yes	Yes
Graphs & Stars	YES	No	Yes
Guide Hands	YES	No	No
Body/Hand/Computer Positioning	YES	No	No
Stress Reduction Mode			
Posture Analysis	YES	No	No
Visual/Sound Control	YES	No	No
10-Key Teaching Mode			
Numeric Keypad Lessions	YES	Yes	No
Error Analysis: Keys to Learning			
No. of Error Measures	16	0	0
Typing Text: Fun Interesting Text...			
Guinness World Records, quotes, music lyrics, common words, riddles & jokes, "Amazing Facts,"	YES	No	No
Dictionary	YES	Yes	No
Sounds			
Error & Custom Beeps	YES	No	No
Music	YES	Yes	No
Master Teacher Mode			
Tracks Multiple Students	YES	No	No
Uiform Tests	YES	No	No
Trend Analysis	YES	No	No
Password Security	YES	No	No
Networking	YES	No	No
Input/Output			
Dvorak & Standard QWERTY Keyboards	YES	Yes	No
Lessons			
Computer Generated Lessons	YES	No	No

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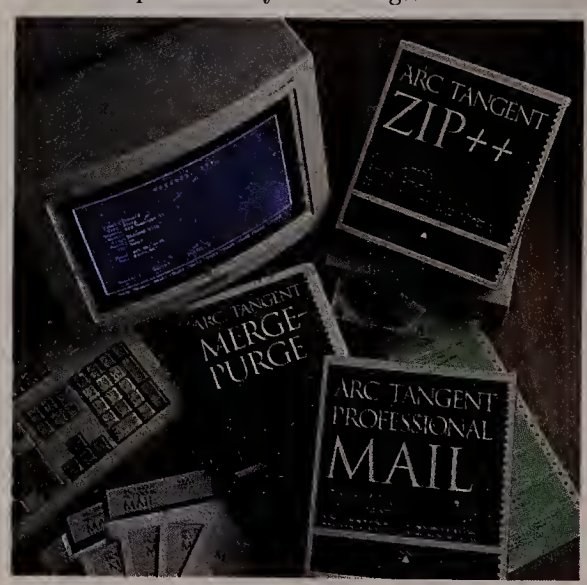
The Cadillac of mailing list software, this is the most advanced, professional-level package available on any PC. Certified by the U.S. Postal Service, you get a highly compressed version of the 3.2 gigabyte U.S. Post Office file on a single CD!

Eradicate bad addresses by checking your list against every valid address in the United States. Put advanced, professional-level features on your desktop that before were only available to huge mailing houses. Slash costs to the bone and get increased response from your mailings.



The Arc Tangent system is engineered for substantial mailing lists and saves you thousands of dollars. It could pay for itself on the first mailing!

Professional Mail

The heart of the system, Professional Mail generates and manages your entire mailing — including these advanced features:

- Database fully customizable; unlimited number of names and addresses
- Eradicate duplicates — even complex "sound-alike" dupes on up to 6 lists at once
- Presorting of 1st, 2nd, and 3rd Class Mail
- Supports 5-digit, Zip+4, Zip+4 Barcode, Basic Bulk, and Carrier Route
- Prints required Post Office reports
- Samples new lists (Test a list by mailing to every 10th address.)
- Highly personalized form letters
- Print any mailing label, including Zip+4 Barcodes
- Convert valuable lists from dBase and others
- Novell network version available

ZIP++

With a CD containing every valid address in the U.S, ZIP++ cleans your lists for the highest accuracy you can possibly get. Give it an address and ZIP++ will tell you what postman will deliver it! (And print the Carrier Route with the address.) Save money on postage and printing, improve the quality of your mailings, and get the best results possible.

- Correct bad addresses
- Missing City? ZIP++ can still find it.
- Insert Zip+4 codes
- Insert Carrier Route codes
- Compare each address against the USPS database of all mailing addresses in the US
- Highly accurate — issued 4 times a year
- Slash rates with Zip+4 codes
- Slash rates even more with Carrier Route codes
- Bare-bone rates with Barcodes printed on dot-matrix, laser, or direct-impression printers
- Certified by the U.S. Post Office for accuracy
- NEW Version 2.1 lets you correct and print a single piece "on the fly."

Merge-Purge

Rid your lists of bad and undeliverable addresses and get real savings. Merge-Purge has the same professional-level features of Professional Mail, but is sold separately for those who want the power of Professional Mail's merge-purge capabilities while managing their lists with dBase, R:Base, ASCII and other general-purpose database files.

- Detect dupes, near-dupes, or "sound-alike" dupes on up to 6 lists at once.
- Merge dupes from 6 files into one file
- Handles any size list

Arc Tangent, the leader in the mailing-list industry, offers the most powerful package available on any PC, you'll save thousands — both on postage rates and printing costs. And this industrial-strength system is easy enough for any PC-user to understand.

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Arc Tangent

BD8600 **ZIP++** 5½" & 3½"	**$195.00**
BD4065 **Merge Purge** 5½" & 3½"	**$149.00**
BD4060 **Professional Mail** 5½" & 3½"	**$695.00**

Professional Mail and Merge Purge require a hard disk. ZIP++ requires a CD-ROM reader.

Stunning Fonts For Your Printed Page.

Scalable Fonts from within WordPerfect, LetterPerfect, Microsoft Word and Works.

Don't just print plain text — fashion creative works of art that bond themselves to the reader. Impress upon the printed page aesthetic, stunning communications that magnetically draw readers to them. This is what professional "Desktop Publishing" is all about. This is what Publisher's Powerpak can do for your word processor.

If you use WordPerfect, LetterPerfect, Microsoft Word, or Works — you absolutely must have Freedom of Font Choice. Whether you print on a dot-matrix, inkjet or laser printer, Powerpak delivers the finest-quality fonts your money can buy.

Why Scalable?

There are two different types of font software: scalable fonts and bit-mapped fonts. Powerpak uses the newer, advanced scalable-font technology. A scalable font is basically mathematical formulas that describe the shape of the font, with no reference to the size. When you need that font, you pick a size, and the needed letters are created instantly from the mathematical formulas. The letters are created "on the fly" — as you need them. Scalable fonts use virtually no hard disk space — only 50K for an entire typeface family, which includes every size you'll ever want.

Bit-mapped fonts on the other hand, gobble megabytes of hard disk space right from the start. Bit-mapped means each "bit", or visible dot that makes up a letter, is "mapped" to a specific location. You need a separate file for each bit-mapped font — that means one file for each font size!

I used to use bit-mapped fonts (before the new scalable fonts came out). I had only 7 different typefaces. Each typeface had five sizes: 12, 14, 18, 24 and 36 point. My limited selection of fonts took up 10 megabytes of hard disk space!

Now I use Powerpak. I have over 114 different typefaces to choose from. In any size I want, from 6 to 1,000 points (Word and Works limits point size to 127). With this seemingly unlimited selection of font choices, I actually use 25% less disk space than before. If I wanted this selection with my bit-mapped fonts, I'd have to buy a 200Mb hard disk!

Quality Fonts

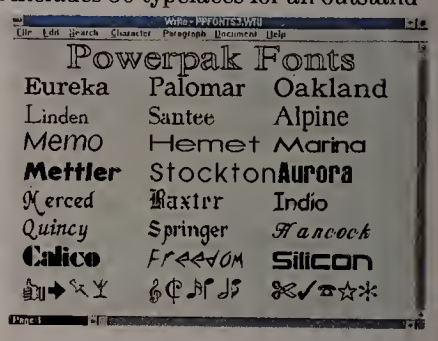
Not all fonts are created equal. There are cheapies out there that print jagged letters and have strange character-spacing. That's why you want to stay with the choice of the pros. PC World recently declared Publisher's Powerpak the "Best Buy" of font software, and gave Powerpak's printer and screen fonts the highest quality rating — Excellent.

- Picking point sizes has never been easier, 6 point to 1000 point
- Easy to install; no new commands to learn

PC WORLD BEST BUY

Add-on Font Packs

Powerpak includes 30 typefaces for an outstanding font-value. (Other font-makers charge $100 to $200 per typeface!) But that's just the beginning. There's an entire library of over 800 typefaces available for you to choose from. Nine foreign languages from Greek to Hebrew to Korean. Atech Font Packs: 117 different volumes — each filled with beautiful assortments of typefaces — and only $29.95 per package.



Super Font Pack FREE with Publisher's Powerpak!

$150.00 value — FREE! 114 typefaces, each in normal, bold, italic, bold italic, thin, condensed, wide, expanded, and hollow.

Powerpak

BD4095-5 **Powerpak w/FREE Font Pack** 5¼"	**$59.95**
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Imagine an instrument that you can quickly pass over a graphic image, logo, design, drawing, chart, photograph — and instantly capture it to your computer screen. Brilliant colors and unmatched resolution can be yours with the Marstek family of scanners.

The new M-6000CG Super Color scanner absorbs an astonishing 262,144 different colors from any printed page or photo! Scan in your photo albums, your wedding picture, or your graduation photo and display it onscreen with lifelike realism. Produce high-impact documents and presentations with the power of graphic images. The possibilities are limitless. The M-6000CG also scans in true 64 gray scales with 400 dpi. In color mode, the M-6000CG scans in 200 dpi. (200 dpi is just right for photos and artwork. Picture this: If you have a standard VGA monitor and scan in a 3″ wide photo — it fills your entire screen with a perfectly duplicated image.)

For precise scanning, you need the M800G/256 (true 256 grayscale scanner) — delivering an incredible, unmatched 800 dots per inch. 800 dpi means crisper, cleaner, more highly detailed images for use in desktop published documents, reports, proposals, newsletters, flyers, and brochures. Scan in a postage stamp and it fills the screen with stunning detail.

And with a host of special effects and patterns built right in, controlling the look of the image is simple — and fun! The images you scan will reproduce as if they were originals, and they can be stored in TIF, PIX, PCX, CUT, IMG and MSP formats.

Or imagine simply scanning text from printed pages, magazines and books — no more re-keying! The Marstek hand scanners deliver unmatched resolution for precise character recognition regardless of the type style or size and even include free optical character recognition (OCR) software to turn the scanned text into ASCII — ready to use in word processing or desktop publishing applications.

And the whole system is ready to run right out of the box. The installation is fast and easy, the technology is simply amazing.

The Marstek Family Of Mice.

The Marstek Mice are designed for higher performance. They're 100% Microsoft compatible and impeccably accurate — but they come with a surprisingly modest price tag. We tested the Marstek Mice (E22 and P93 models) for accuracy and speed against other leading nameplates, and it equalled or outperformed the Microsoft Mouse, Logitech's Series 9, and several others. The secret is in the outer shell design and durable construction. You'll notice a silkier movement and an increased feeling of control the very first time you use it. The Marstek E22 and P93 also feature buttons with firm, clean clicks. A far cry from the "mushy" buttons you find on other mice, great for fast, rapid-fire computing.

BONUS!

Free When You Buy A Marstek Hand Scanner.

Marstek Perceive Personal/DOS OCR Software — These packages allow fast, easy optical character reading (OCR) for text pages. Imagine having the ability to simply SCAN text — instead of re-keying it! You'll improve efficiency for a variety of office tasks.

PC Paintbrush Plus or Rainbow Paint — the industry's most respected and capable paint programs — put the most extensive electronic palette at your fingertips — colors, image blending and more.

Marstek

Marstek Scanner/Mice

BD6150 M-6000CG w/Rainbow Paint and Perceive Personal/DOS OCR	$649.00
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BD6170 Mac 800 Scanner (for Macintosh) w/FREE Enhance Software	$399.00

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When you talk spreadsheets, there's one name that always comes first. Lotus 1-2-3. For the past 8 years, 70% of all spreadsheets sold were Lotus 1-2-3. Over 10 million users daily rely on Lotus 1-2-3 for their spreadsheet needs. And why not? 1-2-3 was a superb piece of software when it was first introduced. It's only gotten better, faster and more refined over the years. Together with friendly Lotus Support 24 hours a day, 7 days a week — is it any wonder 1-2-3 is number 1?

Lotus 1-2-3 Release 2.3

Every PC user should at least upgrade to Release 2.3, the latest release of the original 1-2-3 program. It's still fast on the smallest XT with only 512K of memory, but you should see it take off and fly on the latest 486. It offers hot new features like a graphical interface where you format and use desktop publishing techniques "live" on screen, while you edit.

And Release 2.3 includes advanced new features such as 3D charting, drawing tools, and the "Viewer" (based on Lotus Magellan technology), which allows you to quickly view other files before retrieving them. Also, be prepared for any possibility with the new Solver, which allows for advanced goal-seeking and intricate "what-if" problems.

Lotus 1-2-3 Release 3.1+

For those who work with multiple spreadsheets at a time, here's Release 3.1+. The Lotus "3D" approach allows you to work with 3 spreadsheets at once while you copy, cut, paste and manipulate data between them. And you get the same graphical interface as Release 2.3 with all it's advantages, including: live formatting and 3D charting; fast and easy file viewing; Solver, for advanced goal-seeking and "what-ifs"; and Auditor, for documenting and analyzing worksheet logic.

Lotus 1-2-3 for Windows

At last! The world's best-selling spreadsheet comes to Windows. 1-2-3 for Windows is everything a Windows spreadsheet was meant to be. Besides all the standard benefits of being a Windows application (like common menus and keystrokes, cut & paste between any programs, PostScript printer support and much more), 1-2-3 for Windows announces some innovations of its own.

Announcing SmartIcons — one-click shortcuts for your most frequently used tasks. SmartIcons are little symbols that replace keystrokes, menu selections and more. Size and place them anywhere onscreen. Choose from a library of icons, or create new icons that represent your own commands.

Are you a longtime 1-2-3 user? Perhaps you like 1-2-3 for Windows, but don't want to lose those valuable 1-2-3 commands you have memorized. No problem. 1-2-3 for Windows has two menu systems. "Classic" menus are the same 1-2-3 menus 10 million users have come to know and love. The Windows menu works the same as all Windows menus.

And of course, 1-2-3 for Windows has all the latest advances, like Solver — the goal-seeking technology for when you need the optimum solution.

Lotus Freelance Graphics 4.0

For flawless presentations, show-stopping slides, and stunning onscreen slide shows — you need Lotus Freelance Graphics. New Freelance Graphics is an even better version of Freelance Plus — the product that won just about every major award in recent years from *PC Week, PC World, Publish!, Software Digest* and other top publications.

Not only is Freelance Graphics available as an upgrade to anyone who already uses a competitive paint, draw, or presentation product — any Lotus 1-2-3 user can purchase Freelance Graphics for this same low upgrade price!

Don't miss out on this limited time offer. These are live upgrades, complete with full documentation and diskettes. Call today!

Lotus

LOTUS UPGRADES

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BD5193 Lotus 1-2-3 Rel. 3.1+ *Live Upgrade*	$125.00
BD5197 Lotus 1-2-3 for Windows *Live Upgrade*	$150.00
BD5195 Lotus 1-2-3 for Windows *Regular Product* .... *SAVE $100*	$495.00
BD5196 Freelance Graphics 4.0 *Live Upgrade*	$99.00

Specify 3½" or 5¼" diskette when ordering.

Requirements: 1-2-3 2.3 requires an XT or above with 512K memory; 1-2-3 3.1+ requires a 286 or above with extended memory; 1-2-3 for Windows requires Windows 3.0; Freelance Graphics requires and XT or above with 640K memory.

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How Do You Fill In Pre-Printed Forms?

Are you still filling in insurance forms, legal and tax forms, government forms, invoices, medical and Federal Express forms by hand? Or struggling through the trial-and-error nightmare of using a typewriter? The fact is, filling in pre-printed forms is a classic example of inefficiency, with a high margin for error. The PC can be a great assistant in filling in forms, and FormFiller 3.0 is the premier forms fill-in software for even the most complex multi-page, multi-part, and double-sided forms.

FormFiller 3.0 actually synchronizes your computer printer (a critical first step), to locate blanks and place information on the form with pinpoint-precise accuracy, and it works with virtually any dot-matrix, daisywheel or laser printer.

This powerful software streamlines data entry with a host of on-screen guides and error-checking features. These features not only speed the process, but virtually eliminate errors as well — errors that can be very costly. Along with FormFiller 3.0's extensive data validation features there's plenty of context-sensitive help available for any function.

With FormFiller 3.0, you can decide the order in which the blanks should be filled in, give certain areas color codes for fast visual recognition, include non-printable notes to instruct data entry, "lock" certain information into the form so it won't have to be manually entered each time the form is filled out. You can also quickly set up FormFiller 3.0 to import and automatically fill-in forms directly from your database, and "batch print" your forms.

The system doesn't stop there. It contains a complete set of financial and mathematical functions that you can easily assign to particular blanks to perform a specific calculation whenever value is entered. Or you can automatically perform a series of calculations on a series of numbers. For example, you could quickly instruct FormFiller 3.0 to calculate the extended prices of all items listed on an invoice, total them, deduct a discount, figure and deduct taxes and calculate the final total. There are over 40 math functions in all, including amortization, interest, present and future values, depreciation, percentages — dozens of others!

There's more! FormFiller 3.0 includes a unique "Look-up" feature that stores pieces of information and automatically places them into position with just a menu selection. Part numbers, shipping and billing addresses, names, phone numbers, account numbers, payment terms and hundreds of other details can be organized and stored and retrieved anytime — without looking for them or retyping them. In addition, FormFiller 3.0 allows you to control exactly HOW the data is to appear and be printed. For example, negative numbers can be entered and automatically appear and print in parentheses. Enter a series of 10 digits into a specific field and FormFiller 3.0 displays them as an area code and telephone number, or make the data entered into certain spaces on the form automatically print bold.

This all means that a form that may have taken fifteen or twenty minutes to fully complete (possibly containing errors), now may require as little as one minute to fully complete, including a check for errors and omissions.

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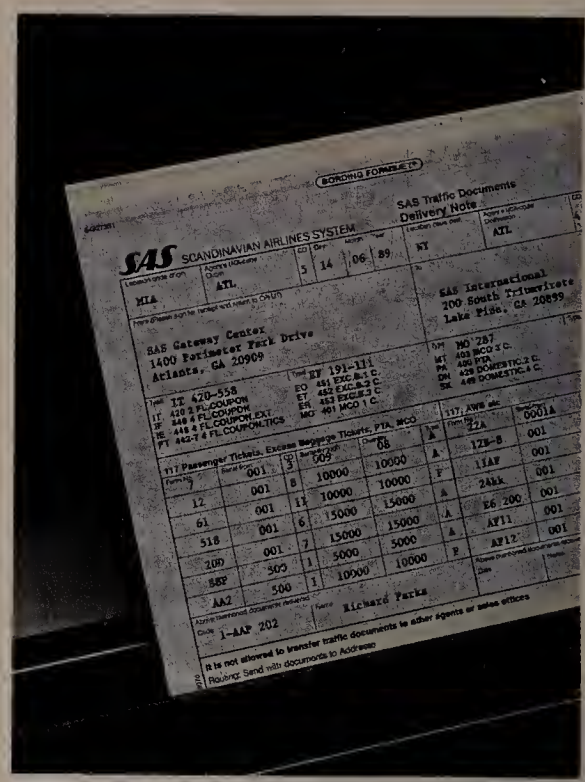

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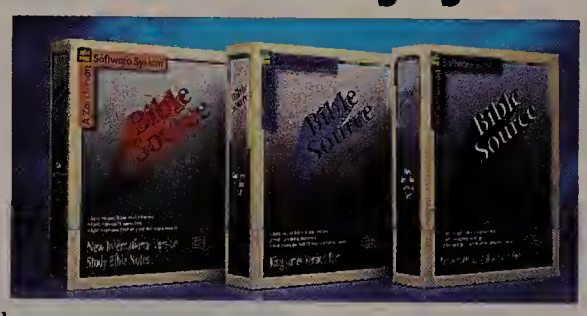

We've seen many Bible-study software titles that offer bits and pieces of functionality. Only one system puts all the required elements together for a truly helpful — and completely integrated — Bible study system. It is BibleSource. This remarkable program (available in King James, New International and New International Study Bible Notes Modules) harnesses the power of your PC to give you more speed, power and flexibility to put together a customized study plan.

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BD Y1485	S	After Dark 1.0 for Windows	$29

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DCA

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BD Y4135	X	Goofy's Railway Express	$14.95
BD Y4140	X	Mickey's Colors & Shapes	$49.95
BD Y4145	X	Arachnophobia	$49.95
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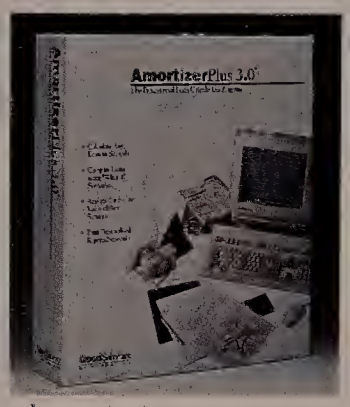

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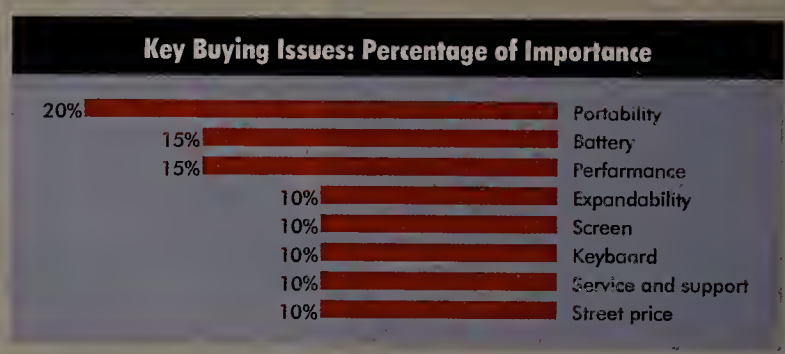
Dell Puts On a Four-Star Performance

Portability, battery life, service, and more—the 320N delivers.

BEST BUY

When you put on your road show, you need a light, fast notebook that is on time for every performance. Best Buy **Dell System 320N** does that and more with a great battery, reasonable price, and wonderful service and support. But even if you choose another notebook, it's hard to go wrong. After all, there are plenty of stars here: More than half these machines rate as very good values, which means you'll have no trouble buying a notebook to meet your needs and fit your working style.



Excellent ★★★★
Good ★★★
Fair ★★
Poor ★

	Reader service no.	Portability	Battery	Performance	Expandability	Screen	Keyboard	Service and support	Street price	Overall value
Altima LSX	732	☆☆☆½	☆☆½	☆☆☆☆	☆☆☆½	☆☆☆½	☆☆☆½	☆☆☆☆	☆☆☆☆	★★★½
AST Premium Exec 386SX/20	733	☆☆☆	☆☆☆	☆☆☆	☆☆☆½	☆☆☆	☆☆☆☆	☆☆☆½	☆☆☆½	★★★½
AT&T Safari NSX/20	734	☆☆½	☆☆☆½	☆☆☆	☆☆☆½	☆☆☆☆	☆☆☆☆	☆☆☆½	☆☆½	★★★½
Compaq LTE 386s/20	735	☆☆☆½	☆☆☆	☆☆☆☆	☆☆☆☆	☆☆☆½	☆½	☆☆☆½	☆☆	★★★
CompuAdd Companion SX	736	☆☆☆☆	☆☆	☆☆☆½	☆☆☆½	☆☆☆☆	☆☆☆	☆☆☆☆	☆☆☆½	★★★½
Dell System 320N	737	★★★★	★★★★	★★★½	★★★½	★★★	★★★★	★★★★	★★★½	★★★★
Everex Tempo LX	738	☆☆	☆☆☆	☆☆	☆☆☆½	☆☆☆☆	☆☆☆☆	☆☆☆½	☆☆☆☆	★★★
IBM PS/2 Model L40 SX	739	☆½	☆	☆☆☆	☆☆☆☆	☆☆☆☆	☆☆☆☆	☆☆☆½	☆½	★★½
Librex 386SX	740	☆☆☆☆	☆½	☆☆☆½	☆☆☆	☆☆☆☆	☆☆☆½	☆☆☆½	☆☆☆☆	★★★½
NEC UltraLite SX-20	741	☆☆	☆☆☆	☆☆	☆☆☆☆	☆☆☆☆	☆☆☆	☆☆☆½	☆☆☆½	★★★
Northgate SlimLite SX20	742	☆☆☆☆	☆½	☆☆☆	☆☆☆½	☆☆☆½	☆☆☆☆	☆☆☆☆	☆☆☆½	★★★½
Panasonic CF-370H6	743	☆☆☆	☆☆½	☆☆☆	☆☆☆½	☆☆☆½	☆☆☆½	☆☆	☆☆☆	★★★
Tangent Model 320N	744	☆☆☆½	☆☆½	☆☆☆½	☆☆☆	☆☆☆☆	☆☆☆½	☆☆☆☆	☆☆☆☆	★★★½
Toshiba T2000SXe	745	☆☆½	☆☆☆☆	☆☆☆½	☆☆☆☆	☆☆☆½	☆☆☆½	☆☆☆½	☆☆½	★★★½
Zeos Notebook 386-20MHz	746	☆☆	☆☆☆	☆☆½	☆☆☆½	☆☆☆☆	☆☆☆½	☆☆☆☆	☆☆☆½	★★★

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

WHERE TO BUY

Altima LSX
Altima Systems
1390 Willow Pass Rd.
#1050
Concord, CA 94520
800/356-9990,
510/356-2408 (fax)
LIST PRICE: 1MB RAM, 1.44MB floppy, 40MB hard disk, carrying case, DOS 4.01 $2999; with 5MB RAM, 2400-baud send fax–modem, WordStar Laptop Collection $3848
ACCESSORIES: 1MB RAM $199, 2MB $349, 4MB $649; 2400-baud send fax–modem $249; battery $99; auto adapter $129
Reader service no. 732

AST Premium Exec 386SX/20
AST Research
16215 Alton Pkwy.
P.O. Box 19658
Irvine, CA
92713-9658
800/876-4278,
714/727-9355 (fax)
LIST PRICE: Model 23V with 2MB RAM, 1.44MB floppy, 20MB hard disk $2995; Model 43V with 40MB hard disk $3395; Model 63V with 60MB hard disk $3795; Model 43V with 4MB RAM, 2400-baud modem, DOS 5.0 $4592
ACCESSORIES: 5MB RAM $999, installed on new system $799; 2400-baud modem $249, 2400-baud fax-

modem $499; battery $99; external charger $119; auto adapter $129; case $129
Reader service no. 733

AT&T Safari NSX/20
AT&T
14K Worlds Fair Dr.
Somerset, NJ 08873
800/247-1212
LIST PRICE: with 2MB RAM, 1.44MB floppy, 40MB hard disk, 2400-baud modem, mouse, DOS 4.01, Windows 3.0 communications software $4749; with 4MB RAM $5228
ACCESSORIES: 2MB RAM $479; battery $129; LAN adapter $599; fast charger $229; auto adapter $129; E-mail paging system $400 plus monthly service charge
Reader service no. 734

Compaq LTE 386s/20
Compaq Computer
P.O. Box 692000
Houston, TX
77269-2000
800/231-0900
LIST PRICE: Model 30 with 2MB RAM, 1.44MB floppy, 30MB hard disk $4399; Model 60 with 60MB hard disk $4799, with 4MB RAM, 2400-baud modem, DOS 5.0 $5966
ACCESSORIES: 1MB RAM $349, 4MB $1499; 1.2MB or 1.44MB external drive with external storage module $674, with desktop expansion base $1274; 2400-baud modem $369; battery $169; charger $149; auto adapter $129; DOS 5.0 $99; case $89
Reader service no. 735

CompuAdd Companion SX
CompuAdd
12303 Technology Blvd.
Austin, TX 78727
800/456-3116,
512/331-6236 (fax)
LIST PRICE: with 2MB RAM, 1.44MB floppy, 20MB hard disk, DOS 5.0, carrying case $2995; with 4MB RAM, 40MB hard disk $3295; with 2400-baud modem $3474
ACCESSORIES: 2MB RAM $398; 2400-baud modem $179, 2400-baud fax-modem $399; battery pack $109; auto adapter $99
Reader service no. 736

Dell System 320N
Dell Computer
9505 Arboretum Blvd.
Austin, TX
78759-7299
800/289-3355,
512/338-8700 (fax)
LIST PRICE: with 1MB RAM, 1.44MB floppy, 40MB hard disk, DOS 5.0, carrying case $2589; with 5MB RAM, 2400-baud fax-modem $3486; with 60MB hard disk $3786
ACCESSORIES: 1MB RAM $149, 2MB RAM $249; 2400-baud pocket modem $299, 2400-baud fax-modem $399
Reader service no. 737

Everex Tempo LX
Everex Systems
48431 Milmont Dr.
Fremont, CA 94538
800/821-0806
LIST PRICE: with 1MB RAM, 1.44MB floppy, 40MB hard disk, mouse, carrying case, DOS 5.0, Windows 3.0 $2799; with 3MB RAM $3099; with 5MB RAM, 2400-baud modem $3728; with 60MB hard disk $3928
ACCESSORIES: 2MB RAM $300; battery $125; charger $145
Reader service no. 738

IBM PS/2 Model L40 SX
IBM
1133 Westchester Ave.
White Plains, NY
10604
800/426-9292
LIST PRICE: with 2MB RAM, 1.44MB floppy, 60MB hard disk, 17-key numeric keypad, carrying case $5245; with 4MB RAM, 2400-baud fax-modem, DOS 5.0 $6609
ACCESSORIES: 2MB RAM $540, 4MB RAM $1080; 2400-baud fax-modem $659; battery $129; charger $219; DOS 5.0 $165
Reader service no. 739

Librex 386SX
Librex Computer Systems
1731 Technology Dr.
San Jose, CA 95110
800/248-4880
LIST PRICE: with 4MB RAM, 1.44MB floppy, 20MB hard disk, DOS 4.01 $4299; with 40MB hard disk, 2400-baud modem $4948; with 60MB hard disk $5148
ACCESSORIES: 2400-baud modem $349; battery $79; charger $199
Reader service no. 740

NEC UltraLite SX-20
NEC Technologies
1414 Massachusetts Ave.
Boxborough, MA
01719
800/632-4636,
508/264-8673 (fax)
LIST PRICE: with 2MB RAM, 1.44MB floppy, 40MB hard disk, DOS 5.0, Windows 3.0 $3999; with 4MB RAM, 2400-baud modem $4733; with 60MB hard disk $5133
ACCESSORIES: 2MB RAM $399; 2400-baud modem $335; 2400-baud fax-modem $585; CDR-36 680MB portable CD ROM reader $599; battery $99; charger $335; auto adapter $60; carrying case $99
Reader service no. 741

Northgate SlimLite SX20
Northgate Computer Systems
7075 Flying Cloud Dr.
Eden Prairie, MN
55344
800/548-1993
LIST PRICE: with 1MB RAM, 1.44MB floppy, 40MB hard disk, DOS 5.0, file compression software $2799; with 3MB RAM $2999; with 5MB RAM, 2400-baud modem $3499
ACCESSORIES: 2400-baud modem $225; battery $99, with charger $149
Reader service no. 742

Panasonic CF-370H6
Panasonic Communications and Systems
2 Panasonic Way
Secaucus, NJ 07094
800/742-8086
LIST PRICE: with 1MB RAM, 1.44MB floppy, 60MB hard disk, battery pack, DOS $3849; with 5MB RAM, 2400-baud modem $4545
ACCESSORIES: 1MB RAM $179; 2400-baud modem $159; battery $79; case $35
Reader service no. 743

Tangent Model 320N
Tangent Computer
197 Airport Blvd.
Burlingame, CA
94010
800/223-6677,
415/342-9380 (fax)
LIST PRICE: with 1MB RAM, 1.44MB floppy, 20MB hard disk, carrying case $1995; with 5MB RAM, 40MB hard disk, 2400-baud pocket modem, DOS 5.0 $2867; with 60MB hard disk $2992
ACCESSORIES: 1MB RAM $100; 2400-baud pocket modem $159, 2400-baud pocket fax-modem $259; battery $45; auto adapter $89
Reader service no. 744

Toshiba T2000SXe
Toshiba America Information Systems
9740 Irvine Blvd.
Irvine, CA
92713-9724
800/334-3445
LIST PRICE: with 2MB RAM, 1.44MB floppy, 40MB hard disk, DOS 4.01 $4199; with 4MB RAM, 2400-baud modem $5367; with 60MB hard disk $5667
ACCESSORIES: 2MB $479, 4MB $889, 8MB $1779; 2400-baud modem $279, 2400-baud cellular modem $359; battery $185; external charger $289; auto adapter $129; case $79
Reader service no. 745

Zeos Notebook 386-20MHz
Zeos Int'l
530 5th Ave. NW
St. Paul, MN 55112
800/423-5891,
612/633-1325 (fax)
LIST PRICE: with 1MB RAM, 1.44MB floppy drive, 20MB hard disk $2295; with 3MB RAM, 60MB drive, carrying case, DOS 5.0 $2795; with 5MB RAM, 2400-baud modem, extra battery and charger $3495
ACCESSORIES: 2MB RAM $349, 4MB $649; 2400-baud modem $219; external 1.2MB floppy $279; battery $89; external charger $50; auto adapter $149; case $79; DOS 5.0 $119
Reader service no. 746

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He can also install your Microsoft Windows applications on your new PCs. And provide a variety of ongoing services and support.*

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One-Touch Presentation Software

TERRY ALLEN

Great presentations spell business success. Nine top packages let you make a splash without getting bogged down in preparation.

Richard Jantz

When called upon to take that long, lonely walk to the podium, are you still toting charts created with your trusty spreadsheet or word processor? You know you haven't used the best tool for the job, and the output is a little lackluster, but you figure doing it the old way is miles easier than learning a presentation graphics package.

Thanks to a new crop of friendly graphics software, most of it *Windows*-based, you've just run out of excuses not to look your best. Even if you give only one presentation a month, it's worth mastering one of these powerful, easy-to-learn packages. See the dramatic effects you can get with a little clip art and a blended color background, and you'll never look back.

In last November's graphics roundup, *Microsoft PowerPoint for Windows* ran away with the only Best Buy, thanks to its emphasis on guiding novices through every step of a presentation, from brainstorming to the actual show. By letting users create presentations based on a master slide and apply formatting changes globally, the program cut production time dramatically.

But *PowerPoint* was just the tip of the iceberg. This year, several programs —including old favorites *Harvard Graphics* and *Freelance*—add similar organizational features. Two *Windows* newcomers—Aldus's *Persuasion for Windows* and IBM's *Hollywood*—surpass *PowerPoint* on this score, providing tools to plan and revise a presentation easily and deliver a consistent message. In addition, this roundup's sole Best Buy—IBM's *Hollywood*—serves up tricks that *PowerPoint* can't touch: advanced charting and enhancement tools that can give you just the edge your presentation needs to stand out from the crowd.

Windows' palette of 16 million colors gives you a better preview of what your images will look like as slides.

The Windows Edge

Clearly, *Windows* delivers some advantages. Unlike the four DOS programs in this roundup, which require you to shuttle between character-based forms, screens, and static graphical views, the *Windows* packages offer all-graphical interfaces so you can manipulate full images directly.

Most of the *Windows* programs provide visual slide sorters, which display a series of slides in miniature so you can drag them into a different order or double-click on a slide to open and edit it. A sorter makes it a snap to reorganize your presentation or merge slides (or transparencies) from last month's show-and-tell.

Another plus: Your color options are richer with *Windows*. With its built-in palette of more than 16 million colors, you get a better preview of what your images will look like as 35mm slides. This color bonanza also gives you better looking graphics for on-screen slide shows and more colorful transparencies and handouts. Generally, the *Windows*

Buying Smart: Presentation Priorities

Business graphics packages used to focus on numeric charting, but today the emphasis is on coordinating an entire presentation. Here are some shopping tips.

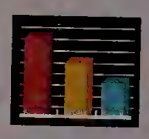
EASE OF USE

You may produce only one or two slide shows a month, often on short notice, so a package should be both easy to learn and to use. Menus should be logically organized so it's easy to find the next step in the process. Good documentation and context-sensitive help are other pluses, but more important are features such as the ability to preview each element or template before integrating it into your document.

ORGANIZATION

To plan a presentation, you'll want an outliner that helps you first develop the main points and then coordinate the creation of images to support them. Your best bet is a program that uses the outliner text to automatically generate slide titles, text charts, and speaker notes. A built-in spelling checker and search-and-replace feature also come in handy.

The real time-savers in planning are master-slide and global-editing features. These let you assign the same background, colors, fonts, and graphic elements to every slide in your show in one fell swoop. Another organizational coup is the slide sorter, an electronic light table that displays thumbnails (miniature versions) of the slides and lets you easily rearrange their order.



CHARTING

Effective text and data charts are the bread and butter of a winning presentation. Equipped with built-in worksheets, all these programs can import numerical data and generate bar, pie, line, and area charts based on that data. If you work with a variety of data types, a broader assortment of charts including scatterplots, combination graphs, and dual *y*-axis charts will prove useful.

All the packages let you select chart types from a chart gallery, and most let you select from a number of templates that have color, legend font, and other formatting already coordinated. If you plan to use text charts, look for a program with templates that provide the same setup for text. The best templates include sample text and data for titles, bulleted lists, and data charts, which you can then replace with real data.

If you frequently update presentations with current data, look for a program that can maintain links with

packages offer better color control, letting you blend several hues into a stunning background. *Hollywood* implements this feature exquisitely: You get a lot of choices, including a radial effect that spreads from the center outward. Unlike *PowerPoint,* which limits you to single-color shades, *Hollywood* lets you use two- and three-color graduated shades. And *Hollywood* and some other programs let you apply graduated color to individual objects as well as backgrounds.

Finally, *Windows* applications tend to have tighter links with other applications—important if you create charts from rapidly changing data. Most presentation programs let you set up links to update your charts with fresh spreadsheet data, but thanks to *Windows'* Object Linking and Embedding (OLE) technology, *Charisma* and *PowerPoint* go one step further. With both packages, you can launch *Excel* simply

underlying spreadsheets, so you can regenerate your charts quickly. The most sophisticated linking technology is found in *Windows* programs. Those that support Dynamic Data Exchange (DDE) will update your data from other applications automatically. In addition to supporting DDE links, *Charisma* and *PowerPoint* provide the newer subset of DDE called Object Linking and Embedding (OLE), which lets you call not only the data but the application itself. For example, double-clicking on a chart pops you directly into *Excel,* where you can update and recalculate a new range of data.

ENHANCEMENT

Choosing a program with plenty of enhancement features means you can produce the most professional-looking shows your talents allow. All the packages equip you with basic drawing tools, so you can add free-floating text or create diagrams using boxes and circles. More advanced tools include shadowed and rotated text and objects, plus the ability to join complex objects or separate them. An extensive library of quality clip art will keep your presentations fresh and lively.

Color controls are constantly improving. If you make color slides, look for a variety of color schemes to choose from—you can apply these predesigned sets of coordinated colors to backgrounds, chart elements, and text. Many packages let you add graduated (blended) color effects to backgrounds, and *Hollywood* even delivers a variety of blending options and lets you apply them to objects such as charts or clip art.

PRODUCTION

Once you've applied the final touches, your job is still not quite done. You'll need to output the images as 35mm slides or transparencies and print out visual aids. All the programs provide a communications link to a professional-quality slide service, so you can use a modem to quickly send your presentation to a slide-making facility. Output support is less of an issue, because all the packages support a host of printers, plotters, and slide cameras.

Look for programs that automatically generate speaker notes—pages that contain reduced versions of each slide with accompanying comments for the speaker to refer to—and audience handouts, which contain reductions of one or more images per page. If your program automatically converts color slides into black-and-white printouts, you won't waste time selecting the right combination of hatch patterns. And if you want to include your graphics in a desktop-published document, look for a program that exports images in the file format you need.

All the programs can produce on-screen slide shows, which are handy for previewing and rehearsing your presentation. If your audience is small, or if you have a screen projector, you can even use your PC for the final show. If so, you'll want a package that offers a variety of transitional effects between images. Only a few provide *run-time shows*—shows that run automatically and can play on other systems—an excellent sales and marketing tool.

SERVICE AND SUPPORT

Unless you're a graphics professional, it's likely you'll need some help with these programs. To test technical support, we called each vendor three times, asking questions of varying complexity, and noted the timeliness and accuracy of the answers. We also factored in support policies, such as hours, toll-free lines, and BBS and fax support.

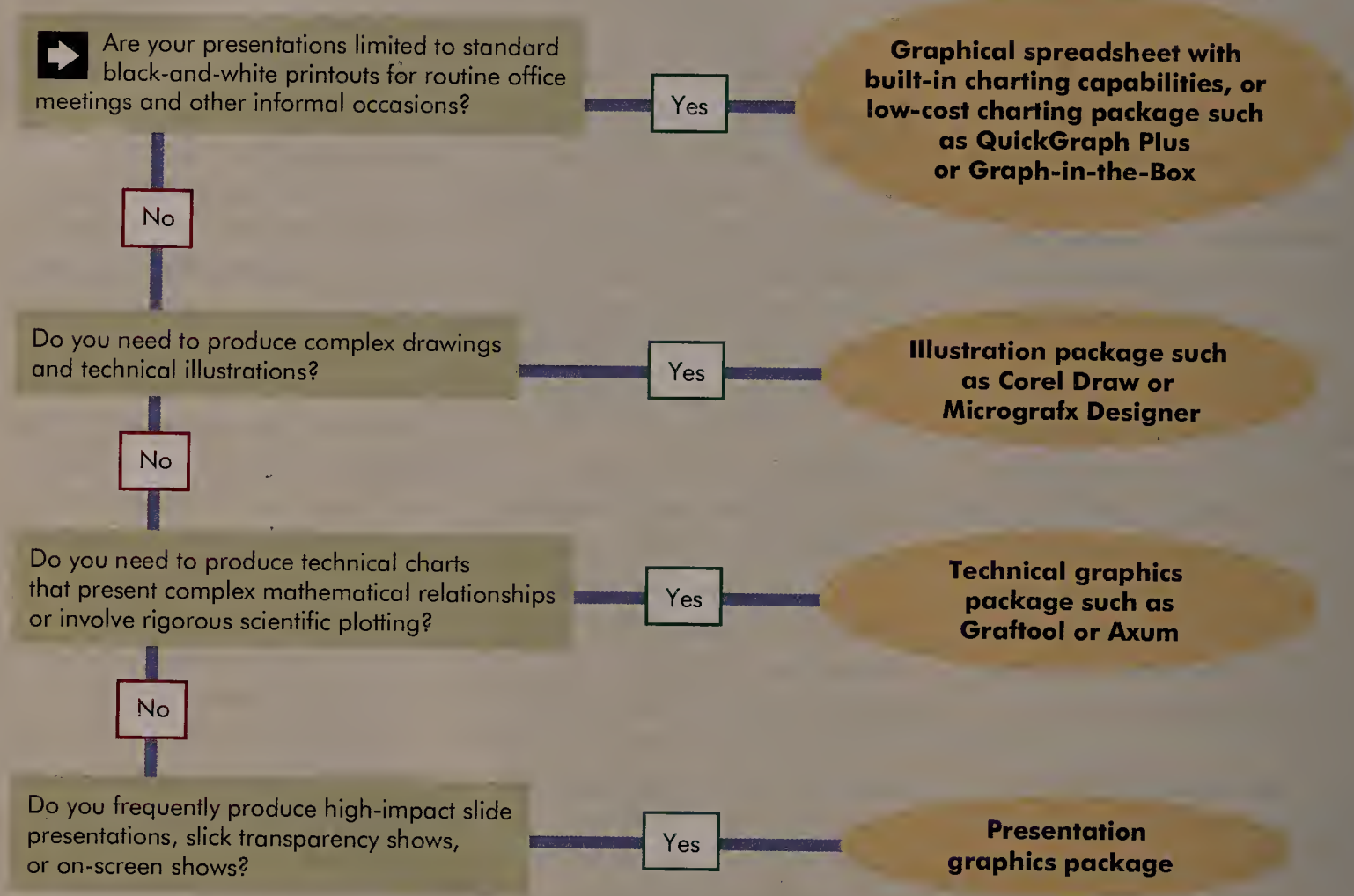
PRICE

Most of these packages sell for $495. This seems a fair price, and you'll likely find them discounted to about $300.

KNOW YOUR OPTIONS

Do You Need a Presentation Package?

Not all presentations require a dedicated presentation package. For in-house sales meetings, many people are content to use the charts they can produce with a spreadsheet package or even a word processor such as Ami Pro. But if the stakes are high or your reputation is on the line, you'll want drop-dead-gorgeous slides, overheads, or screen shows, accompanied by attractive audience handouts and handy speaker notes to prompt you with those one-line zingers. Use this chart to find out if you really need a full-blown presentation package.



by clicking on a chart that you've incorporated as an "embedded object."

Put to the Task

To test the packages, we used each program to produce a typical presentation from start to finish—a sample slide show of a fictitious company's business plan. We divided the procedure into four main tasks: organization, charting, enhancement, and producing the final show. See "Once Upon a Presentation" for a closer look at each task, and check out the reviews to see how the products fared.

Hollywood delivers charting and drawing tools the others can't touch.

Our Best Buy, *Hollywood*, performs almost all the tasks equally well. *Hollywood* borrows the best ease-of-use characteristics from *PowerPoint* and then pours on the features. The result is a package that delivers winning presentations in no time.

PC World contributing editor Richard Jantz is author of Ventura Publisher 4.0 for Windows *(John Wiley and Sons, New York, 1991).*

For more information about all products in this article, circle reader service no. 903.

Applause II 1.5

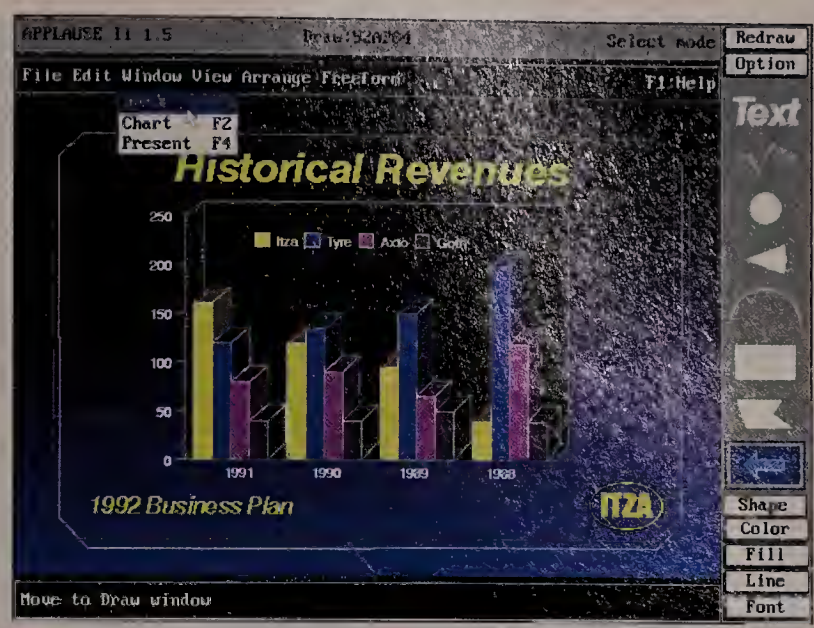
PROS: Superb enhancement tools, colorful special effects
CONS: Lacks outliner and slide sorter

Want to dazzle your audience with text spiraling across the screen and objects that evolve dynamically into other shapes? If flashy special effects appeal, *Applause II* will too.

Applause II's weakest link is organization—the lack of both an outliner and a slide sorter made it tough to get our sample application up and running. Each slide is saved separately, so you can't easily flip between slides or rearrange images from a bird's-eye view. But at least version 1.5 adds master backgrounds, which we used to place the same graduated colors, rules, and graphics behind each slide. And the program's first-rate chart templates made for fast work once we got charting.

Although easy to use, *Applause II*'s modular interface forced us to learn different menus for charting, enhancement, and production. This weakens data links—we created links to import a *1-2-3* file but lost them after using the drawing tools.

Applause II's range of charts, including customizable templates for text charts, provided all we needed. Another plus: *Applause II* has the best color support of the DOS packages.



Applause II's advanced color controls are the best of the non-Windows packages. You can apply graduated colors to any object.

Once finished, we previewed the show with the excellent screen show feature and sent the images to a slide service via the easy communications module. In final production, the lack of a speaker-notes generator bogged us down.

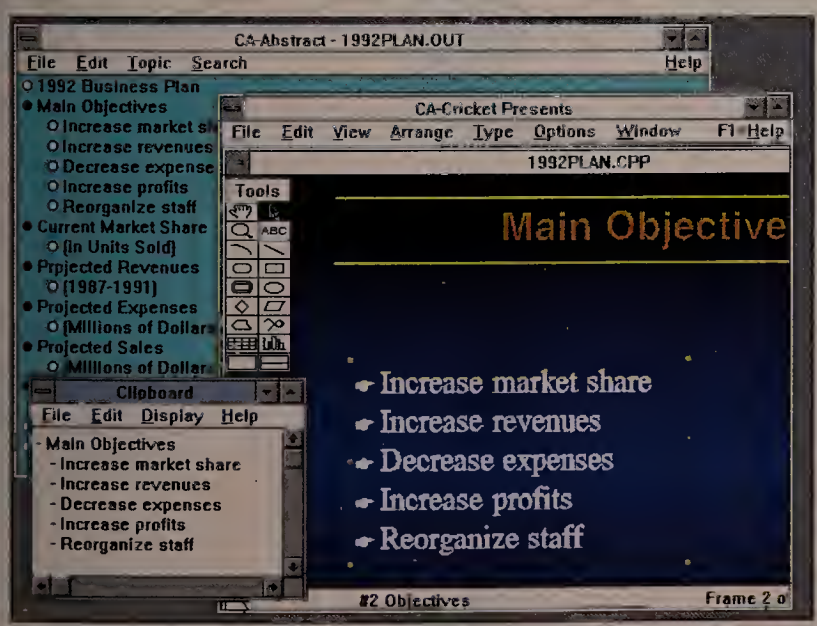
If you're not using *Windows* and you want colorful effects for your slide or PC screen shows, consider *Applause II*. At press time, Borland was in the process of acquiring Ashton-Tate, and the program's future was up in the air. If Borland is smart, it will stick with *Applause II* and pump up its organizational features.

CA-Cricket Presents 1.3

PROS: Strong organization tools, low price
CONS: Limited charting and enhancement skills, too many layered dialog boxes

WINDOWS At only $199, Computer Associates' *CA-Cricket Presents* is a good option for bargain hunters whose presentations are simple and contain mostly text. Its organization tools are tops, but weak charting and an awkward interface will deter some.

Presents breezed through the planning stage of our sample presentation—it kept all our slides in a single file, making them easy to scroll through. Using the slide and title sorters, we could see the entire presentation at once. Rearranging slides in either view was a snap, and we could open multiple presentations at once and edit them simultaneously, quickly importing old slides.



For CA-Cricket Presents, organization is everything. You can plan your shows with a handy built-in outliner.

The new outliner bundled with *Presents*—*CA-Cricket Abstract 2.0*—is a mixed blessing: Although we used it to organize everything from bulleted lists to speaker notes, we had to shuffle the text into our presentation via the Clipboard, which broke the link to the original outline.

Presents isn't your best choice if you use many data charts—you can choose from plenty of templates, but most of them are text charts and the quality is so-so. The program can't set up data links, the chart selection is slim, and chart editing features are limited.

The enhancement and production stages proceeded smoothly, but *Presents'* drawing options were limited, and there are no preset color schemes to aid the hurried novice. In general, we felt stymied by *Presents'* lack of scroll bars, awkward help menus, and excessive layers of dialog boxes. The inability to preview an enhancement before applying it was also frustrating.

If you want a modest, low-cost package for text charts, *Presents* makes sense. But all told, it's the least impressive *Windows* package in the roundup.

FEATURES EVALUATION

Hollywood: All-Around Great Graphics

Organizational and production features are paramount for most users, but look too for flexible charting and enhancement extras to give your presentation that professional edge.

● Yes
○ No
◒ Deficient

	Applause II 1.5	CA-Cricket Presents 1.3 W	Charisma 2.1 W	Freelance Graphics for DOS 4.0	Harvard Graphics 3.0 [2]	Hollywood 1.0 W	Microsoft PowerPoint for Windows W [3]	Persuasion 2.0 for Windows W	Presentation Team 2.0
Standard features									
Price	$495	$199	$495	$495	$595	$495	$495	$495	$495
RAM required	512K	1MB	1MB	640K	438K	1.6MB	1MB	2MB	640K
Context-sensitive help	●	●	●	●	●	●	○	○	●
Organization									
Master slide	●	●	○	●	●	●	●	●	●
Global editing	○	●	○	●	●	●	●	●	○
Outliner	○	●	○	●	○	●	◒ [4]	●	○
Visual slide sorter	○	●	○	○	○	●	●	●	○
Open/edit multiple presentations	○	●	●	○	○	●	●	○	○
Speaker notes/handouts views	○	●	○	◒ [5]	◒ [5]	●	●	●	○
Spelling checker	●	○	○	◒ [6]	●	●	●	●	○
Search and replace	○	○	○	◒ [6]	○	●	●	●	○
Charting									
Import 1-2-3 data	●	◒ [7]	●	●	●	●	●	●	●
Import Excel data	◒ [8]	◒ [8]	●	◒ [8]	●	●	●	●	○
Updates via spreadsheet link	●	○	●	●	●	●	◒ [9]	○	○
Supports Windows DDE links	○	○	●	○	○	●	◒ [9]	○	○
Maintains links at all stages	○	○	●	●	○	●	●	○	○
Bar/line/area/3-D pie charts	●	●	●	●	●	●	●	●	◒ [10]
Combination bar-line charts	●	○	●	●	●	●	○	●	●
Combination area-line charts	●	○	●	○	●	●	○	●	○
Scatterplots	●	●	●	●	●	●	●	●	●
Table charts	●	●	●	●	●	●	○	●	●
Organization charts	●	◒ [11]	◒ [11]	◒ [11]	●	●	● [11]	●	○
High/low/close charts	●	○	●	●	●	●	●	●	○
Dual y-axis charts	●	○	●	●	●	●	○	○	○
Analytical functions	●	○	●	●	●	●	○	○	○
Templates	44	182	70	55	160	112	45	55 [12]	26
Enhancement									
Arcs and polygons	●	●	●	●	●	●	○	◒ [13]	●
Freehand drawing	●	●	●	●	●	●	○	●	●
Curve smoothing	●	○	●	●	●	●	○	○	●
Shadowed text	●	○	○	●	●	●	○	●	○
Shadowed objects	●	○	○	○	●	●	●	●	●
Rotated text	●	○	●	●	●	●	○	○	●
Circular (curved) text	○	○	●	○	●	●	○	○	○
Undo/redo command	◒ [14]	●	●	◒ [15]	●	●	●	●	◒ [15]
Join/separate objects	●	●	●	●	●	●	○	●	●
Flip and rotate objects	●	○	●	●	●	●	○	●	●
						BEST BUY			

	Applause II 1.5	CA-Cricket Presents 1.3 W	Charisma 2.1 W	Freelance Graphics for DOS 4.0 [1]	Harvard Graphics 3.0 [2]	Hollywood 1.0 W	Microsoft PowerPoint for Windows W [3]	Persuasion 2.0 for Windows W	Presentation Team 2.0
Enhancement (continued)									
Copy and paste between images	○	●	●	●	●	●	●	●	●
Import CGM	●	●	●	●	●	●	●	●	◒[16]
Import PCX	●	●	●	○	●	●	●	●	◒[16]
Import TIFF	●	●	●	●	●	●	●	●	◒[16]
Import 24-bit color images	●	●	●	○	○	●	○	●	○
Import EPS	●	●	●	○	○	●	●	●	○
Graduated color backgrounds	●	●	●	◒[17]	●	●	●	●	●
Graduated color objects	●	○	●	○	●	●	○	○	○
Preset color schemes	11	0	23	6	32	20	5000	37	10
Built-in typefaces (for HP LaserJets)	8	35	41	21	29	25	9	3[18]	9
Clip-art images	700+	70	2200+	1000+	500+	200	400+	100+	258
Fill patterns	20	15	39	15	12	22	22	48	35
Maximum colors per chart	3.6 million	256	16.8 million	13	64	256	256	256	16
Colors available	16.8 million	16.8 million	16.8 million	110	16 million	16.8 million	16.8 million	16.8 million	16
Production									
Communications module	●	●	●	◒[19]	●	●	●	●	●
Links to Autographics slide service	○	●	○	●	●	●	○	●	○
Links to Genigraphics slide service	○	○	○	○	○	●	●	○	○
Links to MagiCorp slide service	●[20]	○	●	●	○	●	○	●	●
Links to Slidemasters slide service	○	○	●	○	○	●	○	○	○
Speaker notes generator	○	●	○	○	●	●	●	●	○
Handouts generator	●	●	●	●	●	●	●	●	●
Color to black-and-white conversion	●	●	●	●	●	●	●	●	●
Supports HP LaserJet, dot matrix, and PostScript printers	●	●	●	●	●	●	●	●	●
Export CGM	●	○	●	○	●	●	○	○	◒[16]
Export PCX	○	○	●	●	○	●	○	○	◒[16]
Export TIFF	○	○	●	●	○	●	○	○	◒[16]
Export EPS	●	○	●	●	●	●	○	○	◒[16]
Create run-time shows	●	○	○	●	◒[21]	●	○	○	○
Screen show transition options	25	14	21	14	10	16	1	15	1
Service and support									
Unlimited free support	●	◒[22]	●	◒[23]	●	●	●	◒[23]	●
Toll-free tech support	○	●	○	●	○	●	○	○	○
Daily support (hours)	10.5	11	24	11.5	9	11	12	10	8
Weekend support	○	○	●	○	○	●	○	○	○
BBS support	●	○	●	●	●	●	●	●	●
Fax support	●	●	●	○	●	●	●	●	●
Other extra-cost training or support	●	○	●	●	●	●	●	●	○
						BEST BUY			

W Windows product.
1 Freelance Plus 3.01 won a Best Buy in November 1989.
2 1990, 1991 World Class Award winner.
3 Best Buy in November 1990.
4 No outliner but reads Microsoft Word and ASCII outlines.
5 Character-based notes only.
6 In outliner only.
7 WKS files only.
8 SYLK files only.
9 Embedded charts only, via OLE.
10 3-D pie charts are shadowed, not projected.
11 Via template.
12 Each template contains multiple formats.
13 Arcs only.
14 Undo only.
15 Undelete only.
16 Via separate program bundled with package.
17 Available only through slide service.
18 Package includes Adobe Type Manager.
19 Provided free by slide service.
20 Via Ashton-Tate Graphics Service.
21 Extra-cost option.
22 Free for 6 months.
23 Free for 90 days.

Charisma 2.1

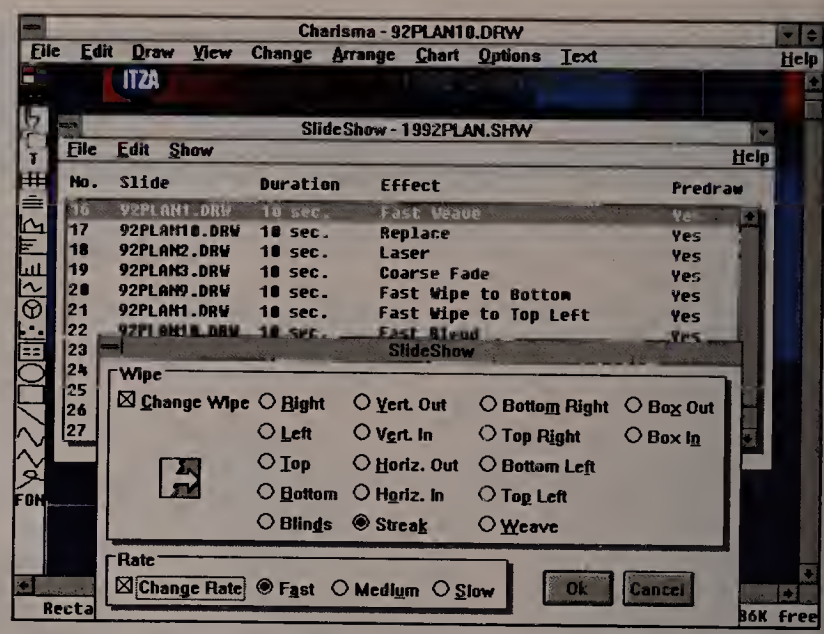
PROS: Robust charting and enhancement features, seamless data links

CONS: Lacks organization tools, not simple to use, no speaker notes

WINDOWS If your presentations call for complex graphs and fancy drawings, Micrografx's *Charisma* will respond loud and clear. It's no organizational wizard, but number crunchers and graphic artists will revel in *Charisma*'s overstuffed toy chest.

Managing the planning stage with *Charisma* was tedious—the program lacks an outliner, a slide sorter, and other planning tools. Instead of providing a master slide or background, *Charisma* places multiple slides side by side in a large window. Because each slide is a separate file, learning how to view individual slides or change their order required some time.

In the charting stage, *Charisma* turned up the heat. It not only used DDE to set up hot links to our *Excel* spreadsheets, but also used OLE to embed an *Excel* chart in our presentation so we could launch *Excel* directly from *Charisma* and make changes on the spot. The program's broad range of charting styles and data manipulation options is the best of the *Windows* group.



Charisma's screen show feature includes a broad selection of fades, wipes, blends, and other transitional effects.

Charisma's superior drawing tools, flexible file import options, and immense clip-art library provided us with everything we needed to embellish our charts. Extras like curved and rotated text make text charts come alive, and support for 24-bit color images may entice you to invest in a color scanner.

Producing 35mm slides, handouts, and a screen show in the final stage also went well, except that creating speaker notes required a fair amount of manual labor.

Charisma isn't the ultimate solution for presentation management, but its charting and enhancement capabilities are second to none.

Freelance Graphics for DOS 4.0

PROS: Versatile charting and drawing, run-time screen show

CONS: Lacks slide sorter and speaker-notes generator

Lotus's *Freelance Graphics for DOS 4.0* is a must-buy upgrade to last year's *Freelance Plus 3.01*. The interface is much more graphical—click on a chart, and the linked data form pops up—and it offers better screen fonts. This mature, feature-rich package is a good overall value for DOS users.

Freelance's new organizational aids include an outliner, master background feature, and templates, but it still treats each show as a series of files rather than a unit, making it more difficult to reorganize slides or merge old ones.

With Freelance Graphics for DOS, you can place a master background of colors, rules, and logo behind all the slides in your presentation.

Freelance is a wizard at charting—it quickly churned out almost everything we needed. With its superb hot links to *1-2-3* worksheets, we had no problem regenerating charts based on fresh Lotus data.

Adding enhancements was a mixed bag: Drawing tools are excellent, but we were hamstrung by limitations on color—only 13 shades per chart and no graduated effects.

If you need to run out and buy a package so you can create a slide presentation for the next day, look elsewhere—*Freelance* doesn't bundle a communications module, so we had to send for it (free) from the slide service. We also had to generate speaker notes manually. *Freelance*'s screen show features are top-notch and include a run-time capability.

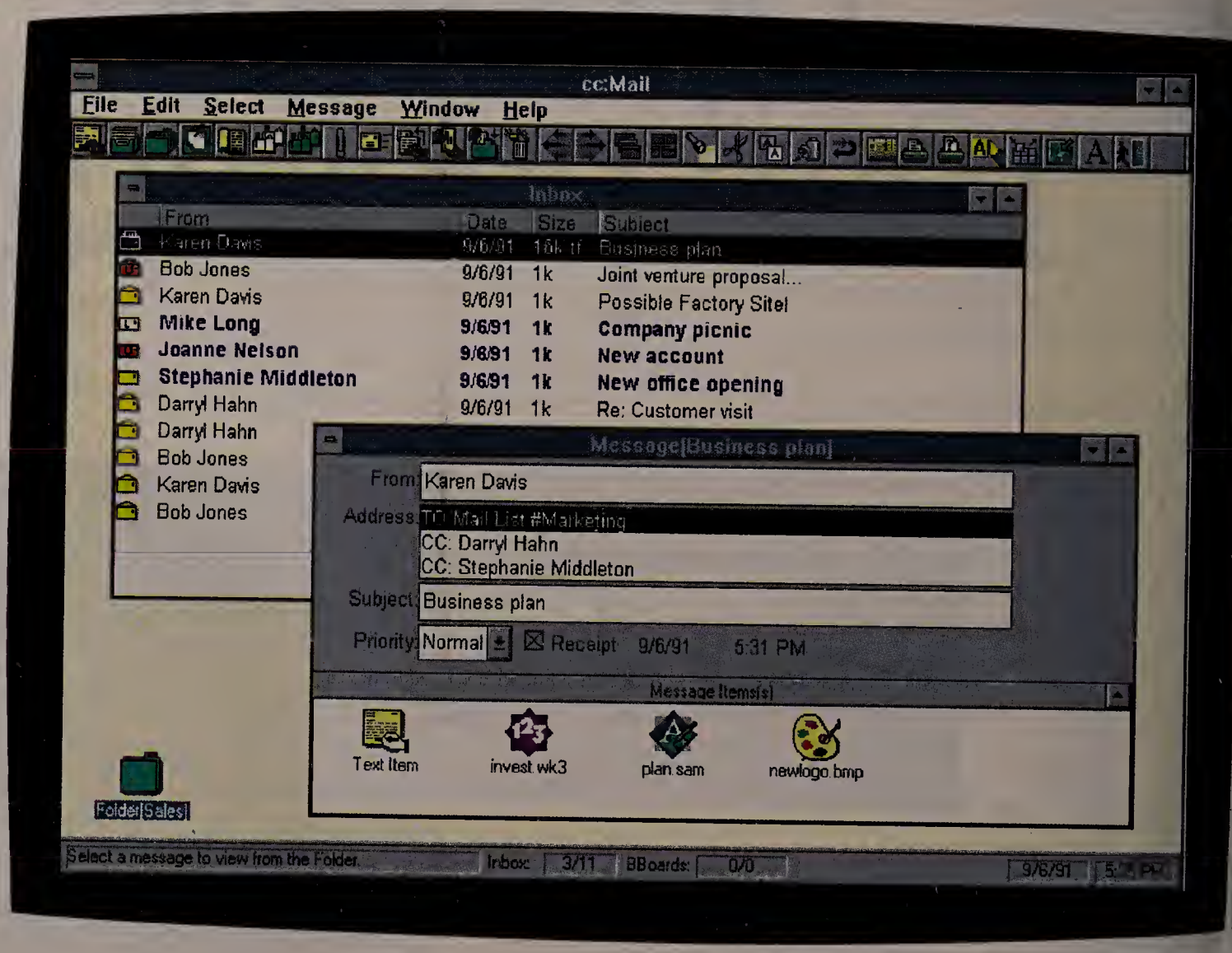
Like *Harvard* and *Applause II*, *Freelance* is a good overall value—so how can a DOS user decide? *Freelance* can't touch *Applause II* at color controls, and it can't keep pace with *Harvard* at charting and enhancements. But *Freelance* is $100 cheaper than *Harvard*, offers the most clip art of any of the DOS packages, and it's the only DOS program with an outliner. That said, you're on your own.

Why is cc:Mail the world's leading electronic mail package?

Just look wh

cc:Mail is so easy to install, learn and use, you can have your electronic mail system up and running in almost no time.

Only cc:Mail can send information across all of these computing platforms to reach everyone in your organization.



Over a million satisfied customers have already given cc:Mail a first-class rating. For example, Windows users love its easy-to-use interface, SmartIcons™ and dialog boxes. And PC World *says "Sending a cc:Mail message is easier than addressing an envelope and licking a stamp." 9/91*

at it delivers.

Its state-of-the-art, third-generation architecture will meet your messaging needs as your company grows.

It's easy to see why cc:Mail from Lotus® is so popular. Because it delivers more than messages. It handles just about any electronic mail need you might have. No matter how large or small your workgroup is. With it you can send text, files, graphics, and facsimile across all major local area networks such as Novell,® LAN Manager and Banyan.® Without needing new hardware.

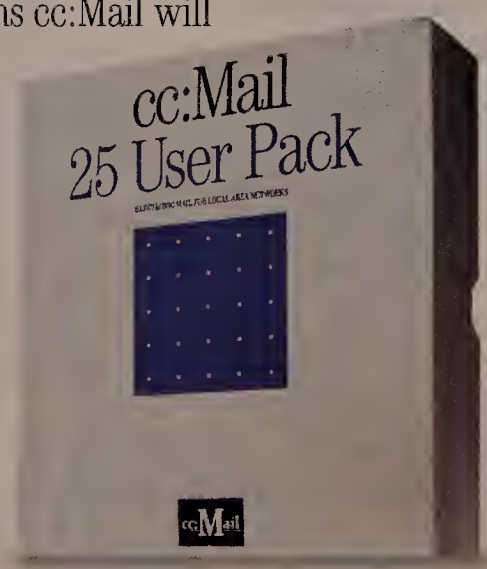
Better still, it's the only system that allows you to send electronic mail effortlessly back and forth from different platforms—such as DOS, Windows™ 3.0, OS/2® and Macintosh—across the same LAN, without the need for gateways. Plus, with cc:Mail you can access public mail and even mainframe mail quickly and easily.

LAN TIMES READERS CHOICE 1990 1991

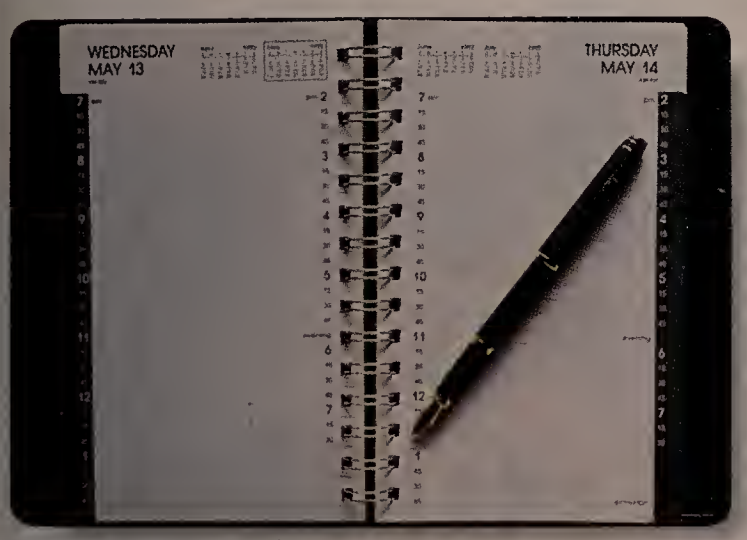
Our newly released cc:Mail for Windows takes full advantage of Windows 3.0. Support of Dynamic Data Exchange lets you easily send other mail-enabled Windows documents from within those applications. For example, you can send a report you've written with Ami Pro for Windows across the country while the application is still on your desktop.

Plus, cc:Mail is the first package of its kind to take advantage of a new, fully scalable messaging architecture. This means cc:Mail will grow along with your business. Whether you're adding two new users, 20,000 or 200,000, cc:Mail is a proven solution.

But for now, turn the page. And learn how to get our free demo disk, the first of many benefits cc:Mail delivers.



You can send a file from any mail-enabled application, such as 1-2-3 for Windows and Ami Pro for Windows without leaving the application.

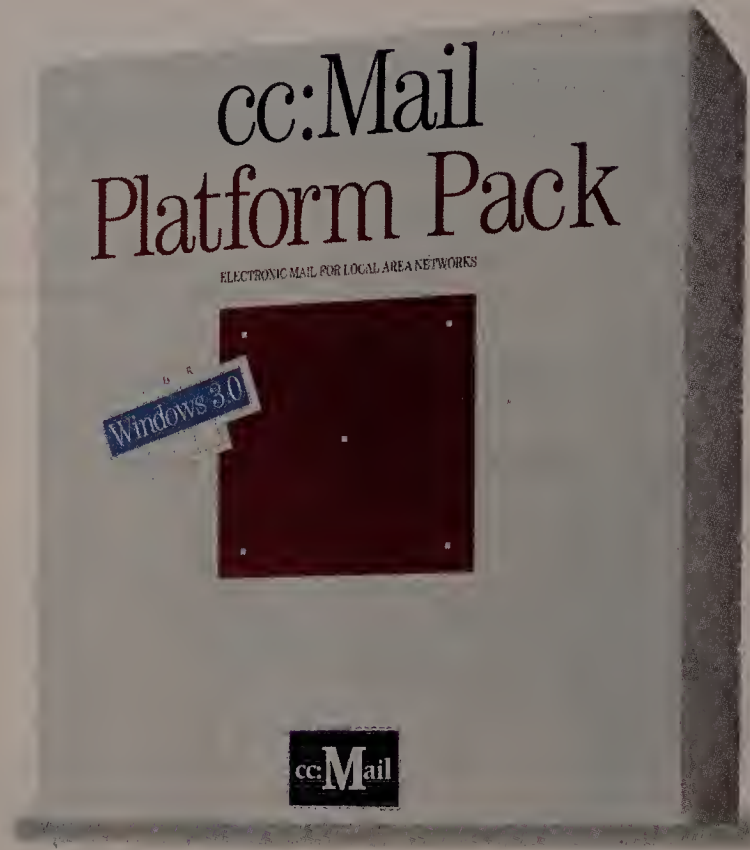


Keep things running on time with cc:Mail's advanced integrated calendaring and scheduling option.

The one package that has it all.

It's true. When you think of its scalability, its high performance and its complete connectivity, no other electronic-mail package even comes close. So whether you're a LAN administrator, an IS manager or an end user in a small or large company, cc:Mail delivers everything you've been looking for. From its intuitive interface to its ability to send compound documents with multiple mixed media items in a single "envelope." For a free demo disk of the Macintosh, Windows or DOS Platform Pack of your choice, call us today at **1-800-448-2500.**

"When it comes to overall electronic mail features, cc:Mail is the best of the bunch."
PC WEEK 10/22/90



"Lotus' cc:Mail for DOS 3.2 and its Windows version 1.0 offer everything you need in messaging mail management and connectivity. Intelligent menu organization makes both DOS and Windows versions a breeze to learn and use. It's clearly a best buy."
PC WORLD 9/91

cc:Mail from Lotus

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Harvard Graphics 3.0

PROS: Strong charting and drawing tools
CONS: Lacks outliner and slide sorter

If *Windows* doesn't belong in your office but presentation graphics do, your best bet is probably Software Publishing's *Harvard Graphics*. It's a close call when compared with *Freelance* and *Applause II*, but if we had to choose, we'd pick *Harvard*. It's slightly easier to use, and it offers superior charting features.

To plan our presentation, we used a character-based screen to set up global parameters. Unfortunately, *Harvard* lacks an outliner, but we successfully imported our bulleted lists directly into empty text chart forms and used the program's built-in spelling checker to snag errors.

Harvard's extensive charting gallery included all the chart styles we needed. One of *Harvard*'s unique tricks is its auto-build feature, which we used to turn our five-bullet chart into five different slides, with each item added sequentially. The chart-linking options include more formats than in any other DOS package, and regenerating charts with new data was a snap.

In the enhancement stage, *Harvard*'s graphical drawing mode was a bonanza: Its icon-rich tools and point-and-shoot simplicity are tops among DOS packages. After importing our scanned image and clip art, we added graduated color and used an "evolve" feature to change one object into another—impressive tricks on a par with *Applause II*.

Harvard Graphics' point-and-click drawing mode makes it easy to enrich a presentation with scanned images and graduated color effects.

Automatic speaker notes streamlined our screen show, which included such impressive features as animation and interactive branching—both useful for sales presentations.

There's a good reason why *Harvard Graphics* is so popular. It's the most versatile presentation graphics program available for DOS.

Hollywood 1.0

PROS: Powerful organization, dynamic charting and linking, unique paint tools
CONS: No area/line combo charts

WINDOWS Do you have to choose between *PowerPoint*'s presentation hand-holding and the advanced graphics of a *Charisma*? Not any more. IBM's *Hollywood* combines a smooth interface, plenty of organizational tools, and a dazzling array of charting and drawing tricks. No wonder it wins the Best Buy.

To plan the show, we opened a new file, and *Hollywood* displayed multiple views for each slide; master, page, notes, and handout. After selecting a page format, we applied a template to the master page and then selected a color scheme. You can preview all your templates and schemes in handy pop-up dialog boxes. With *Hollywood*, you logically create slides in layers, and at any time you can view any combination of these layers—helpful for creating a build series.

Hollywood offers unique enhancement tricks, such as curved text and three-color graduated fills on any object.

Next we used the outliner to import text and applied the first-rate spelling checker and search-and-replace feature. The slide sorter made it easy to reorganize and merge slides.

We had no trouble importing *Excel* spreadsheets, setting up DDE links, and constructing charts from the ample selection. It was easy to reduce the size of a chart or modify the master.

Hollywood scored big at enhancement—its text manipulation stunts are comparable to those of high-end drawing applications. We created flashy titles that we could rotate, shadow, mirror, curve, and add graduated colors to, and we could preview text before applying it. *Hollywood*'s paint and spray-can tools are unique to this roundup.

Producing the show was a cakewalk. *Hollywood* provided everything we needed, including speaker notes, handouts, and superb screen shows. *PowerPoint* paved the way, but now *Hollywood* is king of the presentation road.

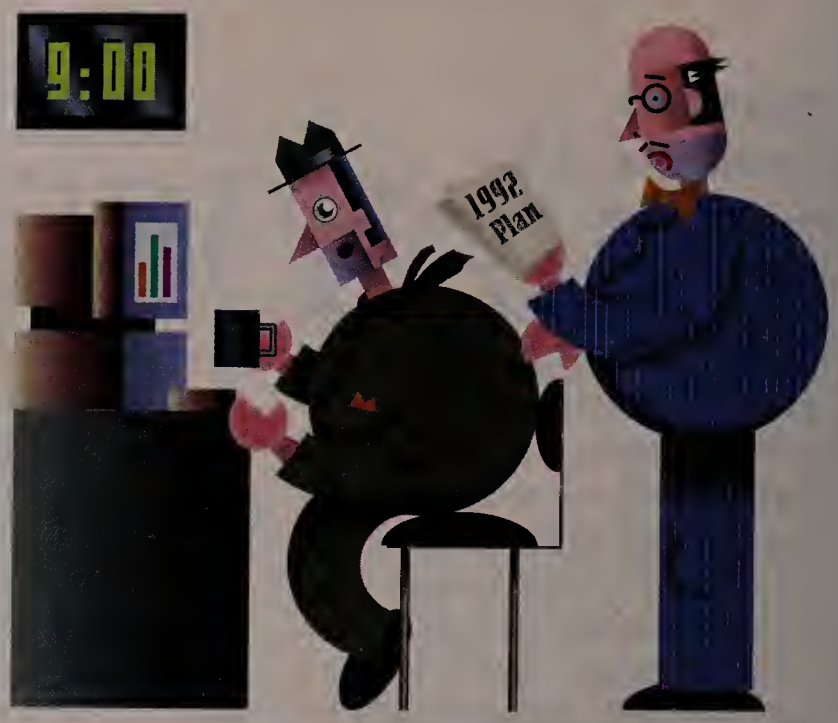
Once Upon a Presentation

It's 9 a.m. You're still brushing muffin crumbs off your lap, when your boss looms up behind you. He wants you to give a 10-minute presentation on the latest 1992 business plan, complete with slides and handouts, at tomorrow's lunchtime board meeting. It has to look really good, he says, and oh, by the way, he wants to preview it *before* you have the slides produced.

You call your slide production shop and ask how fast they can turn the job around. They say, get the slide material to them by noon, and you'll have the finished slides 24 hours later—in the nick of time.

You've got 3 hours.

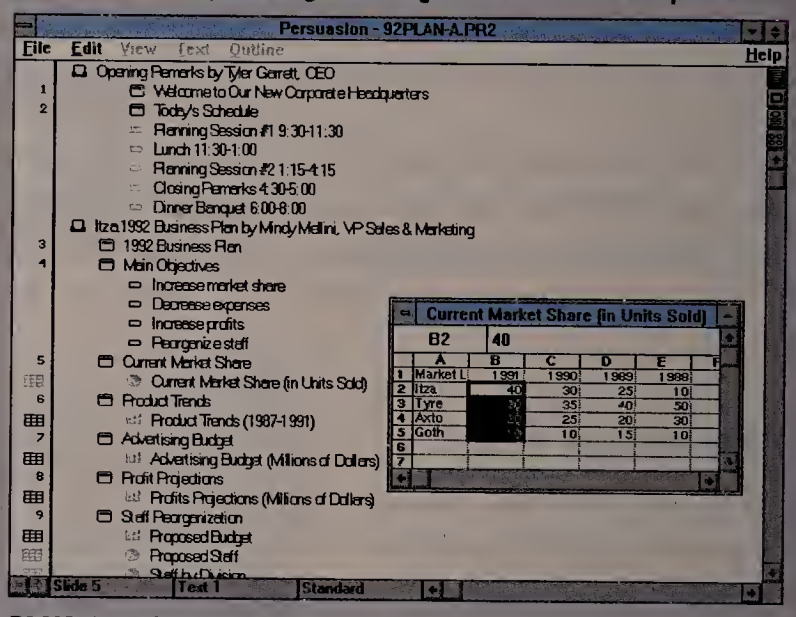
So what do you do? You could tear your hair out, maybe quit and start that bed-and-breakfast you've always dreamed about. *Or* you could sit down at your computer, call up your presentation graphics program, and get to work.



Stage One: Organization

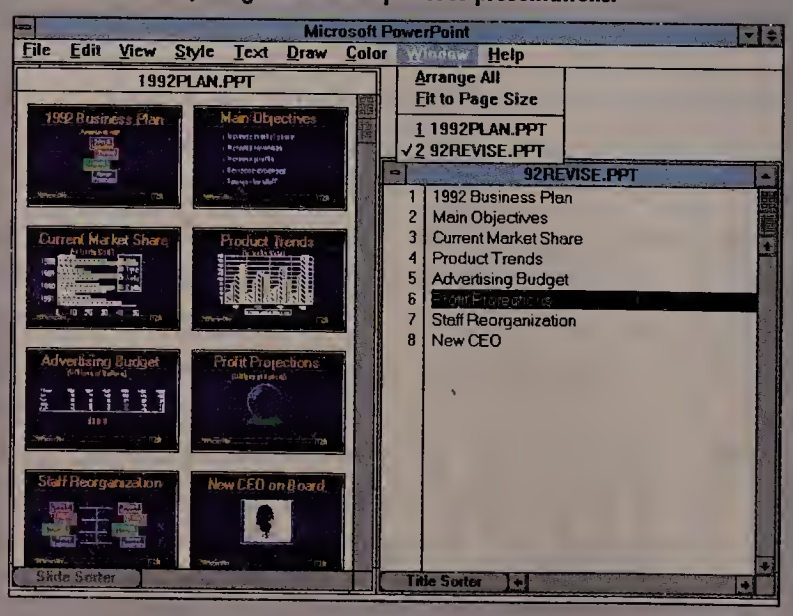
9:02a.m.

9:05a.m. Collect your thoughts and organize the slide show sequence.



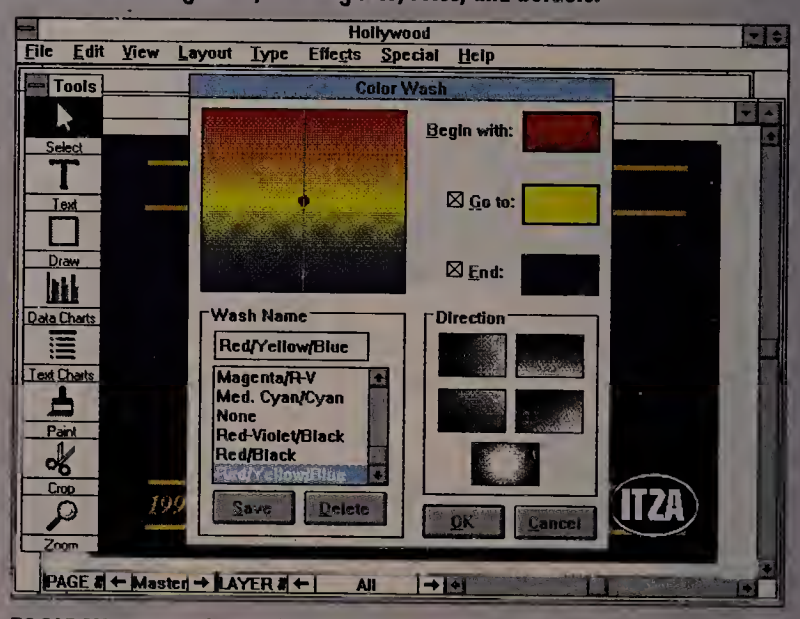
TOOLBOX: outliner, slide sorter

9:25a.m. Create a list of the slides you'll need. If you can use existing slides, merge them from previous presentations.



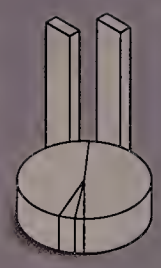
TOOLBOX: outliner, slide merging utility

9:45a.m. Set up a master slide complete with color scheme, fonts, background, running title, rules, and borders.



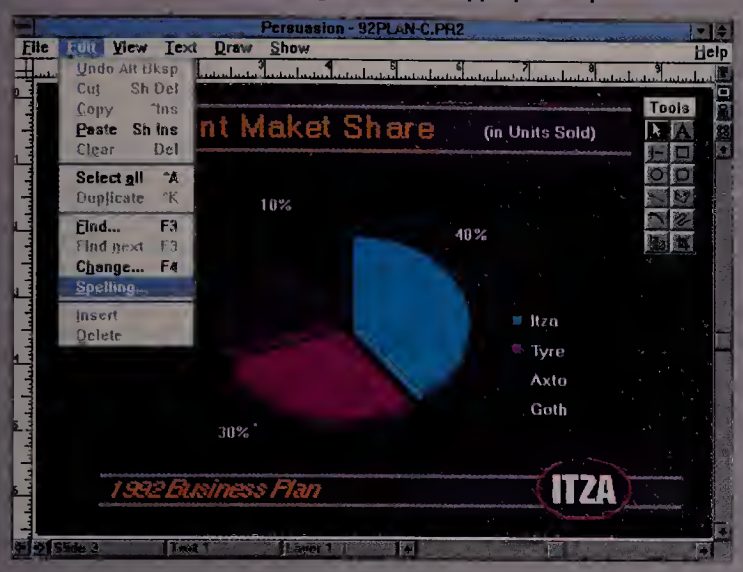
TOOLBOX: master slides, global controls, color templates

Stage Two: Charting



10:05 am Import text files, check spelling, and format the text for charts.
TOOLBOX: text imports, spelling checker, font controls, shadows

10:20 am Create data charts by selecting from a variety of chart types and then defining links to the appropriate spreadsheets.



TOOLBOX: chart gallery , spreadsheet imports

10:45 am Update the spreadsheets with the latest projections.
TOOLBOX: spreadsheet updates

Stage Three: Enhancement

11:00 am Place and size imported graphics.
TOOLBOX: graphics editor

11:10 am Add clip art and symbols from the program's built-in collection.

TOOLBOX: clip art, graphics library

11:20 am Edit the graphics and embellish the charts.
TOOLBOX: drawing tools, color controls

Stage Four: Production

11:45 am Give your boss an on-screen preview of the presentation.
TOOLBOX: screen show transition options

11:59 am Send the approved presentation to a slide service for overnight production and delivery of the finished 35mm slides in time for tomorrow's meeting.

TOOLBOX: communications module, slide service links

12:15 pm Generate and print speaker notes and audience handouts.
TOOLBOX: speaker notes generator, handout generator, automatic color-to-black-and-white conversion, printer and font support

Stage Five: D day

9:05 am Calm down.
TOOLBOX: antacid

12:00 pm Make the presentation.
TOOLBOX: slide projector, screen, coffee, sandwiches

Maybe they'd get more involved if your presentation had a higher I.Q

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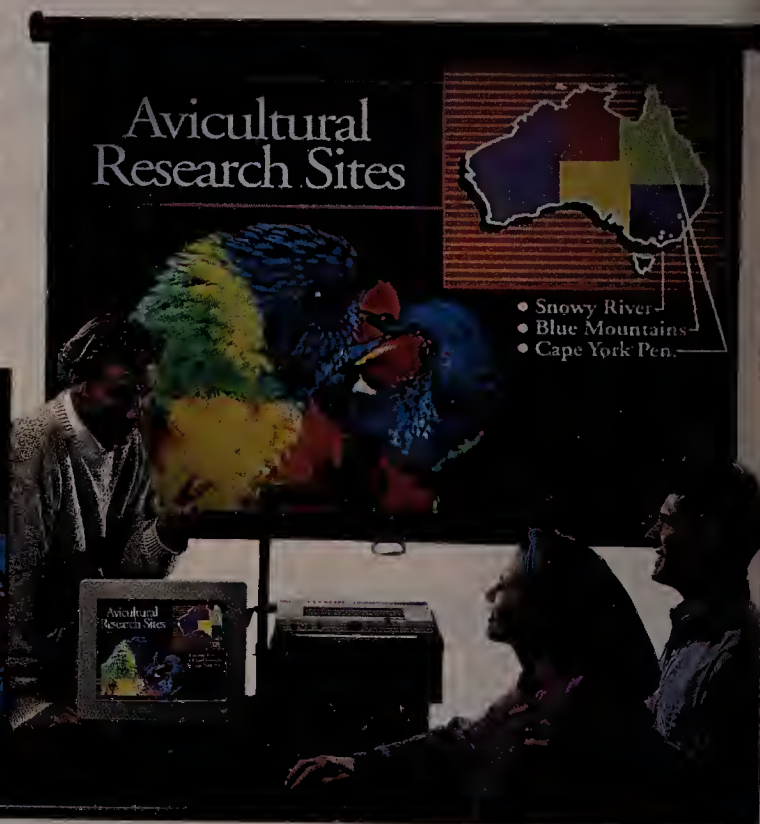

Ovation projects to the big screen the same color and clarity that you see on your computer monitor.
Above right: Actual computer monitor image.
Above: Actual projection screen image from Ovation LCD projection panel.

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Circle 241 on reader service card

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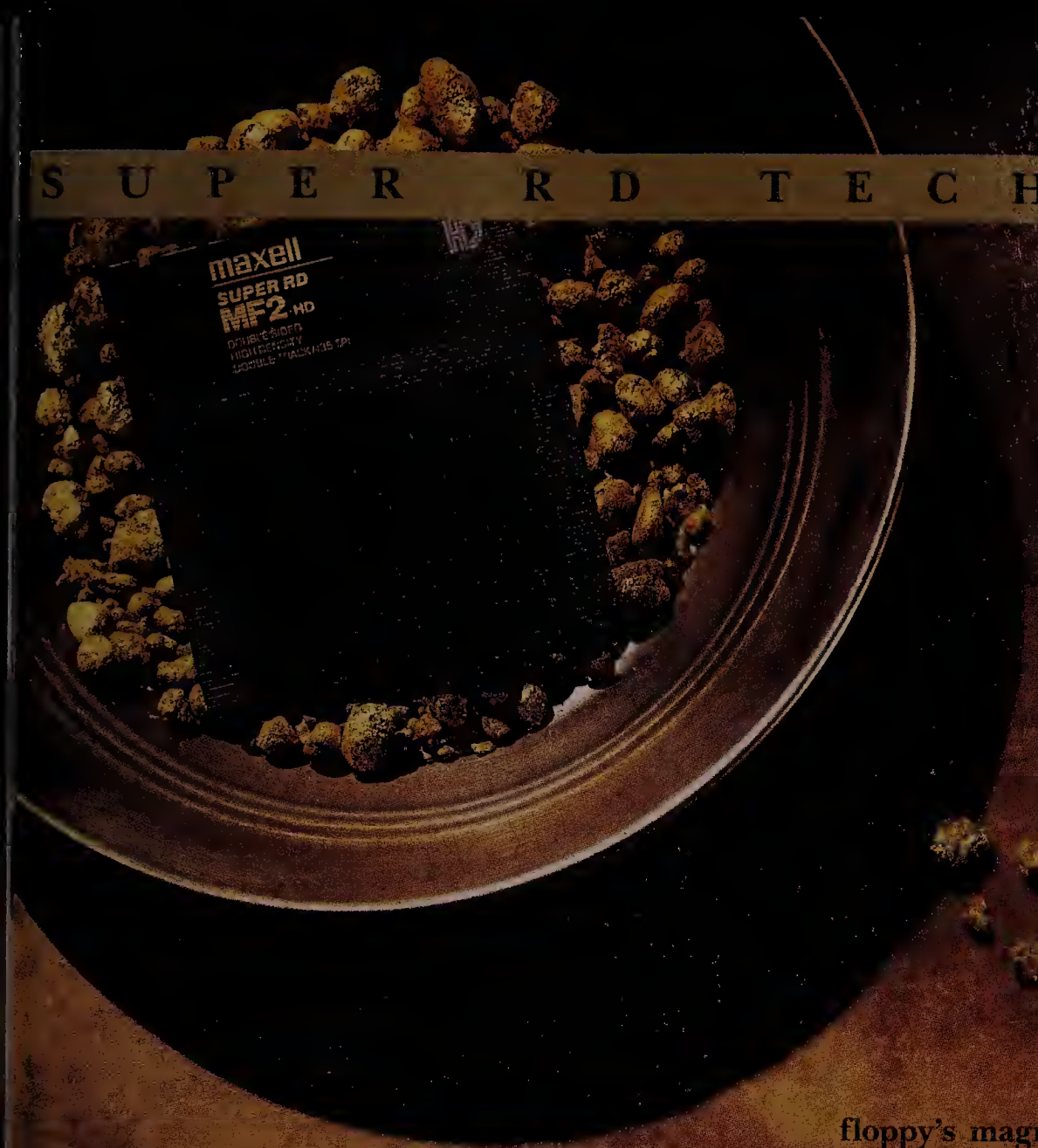

ways to tell the real thing from fool's gold.

In 1983 we introduced the world to the Gold Standard of Technology. Others have followed but never equalled our single-minded pursuit of superior floppy disk performance. And now, 8 years later, we're pleased to present the Maxell Super RD MF2-HD. Don't be fooled by anything less.

1. Look for a better shutter system.

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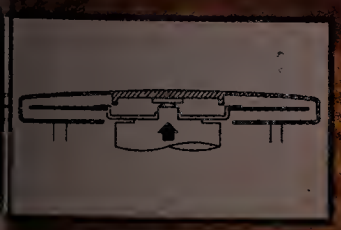

2. Look for a better shell material.

The composite shell employs a highly flexible material that allows constant contact between the floppy's magnetic disk and your computer's drive head. So no matter what the individual characteristics of your drive unit, you get maximum read/write accuracy.

3. Look for enhanced magnetic particle performance.

The Maxell HE Magnetic Particles used in SUPER RD MF2-HD offer superior signal stability and a significant improvement in the signal to noise ratio. Which ensures every disk will generate a full power signal and enhanced compatibility between machines.

4. Look for the name Maxell.

One name says it all. Reliability. Innovation. Leadership. The Gold Standard. Only from Maxell.

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THE GOLD STANDARD

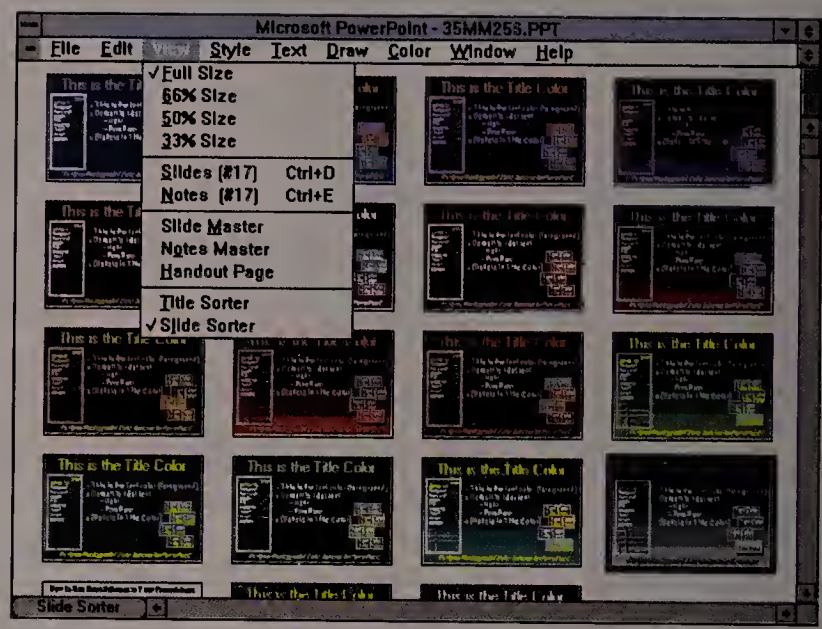
Microsoft PowerPoint for Windows

PROS: Easy to use, top organization tools
CONS: Limited charting and enhancement

WINDOWS With its superb presentation aids and manageable feature set, *Microsoft PowerPoint for Windows* is a natural for the casual user who lacks the time to learn the software or relearn it every few weeks. It doesn't give you every arrow found in *Hollywood*'s quiver, but it's a dream to learn and use.

Creating a presentation in *PowerPoint* is a breeze. After setting up a master and selecting a color scheme from the collection of 5000, we imported our ASCII outline into the title sorter view. *PowerPoint* also provided notes and handout views for each slide, and let us open multiple presentations and merge old slides.

In the charting stage, we easily pasted templates from other presentations into our show and set up data links. Though *PowerPoint* doesn't provide dynamic links to spreadsheets, we could import an *Excel* chart via OLE as an embedded object. By double-clicking on it, we launched *Excel*, where we changed the data and regenerated the chart.



A master at organization, PowerPoint includes a wide variety of color schemes that you can view side by side in the slide sorter.

PowerPoint's charting repertoire is limited—the only way to create a combination graph was to copy and paste one graph over another and then try to align the two. There aren't many drawing tools to play with, but *PowerPoint*'s supply of clip art filled in the gaps. The production stage took no time—*PowerPoint*'s single screen show transition didn't interfere with our preview task, and the automatic speaker notes and handouts left us well prepared.

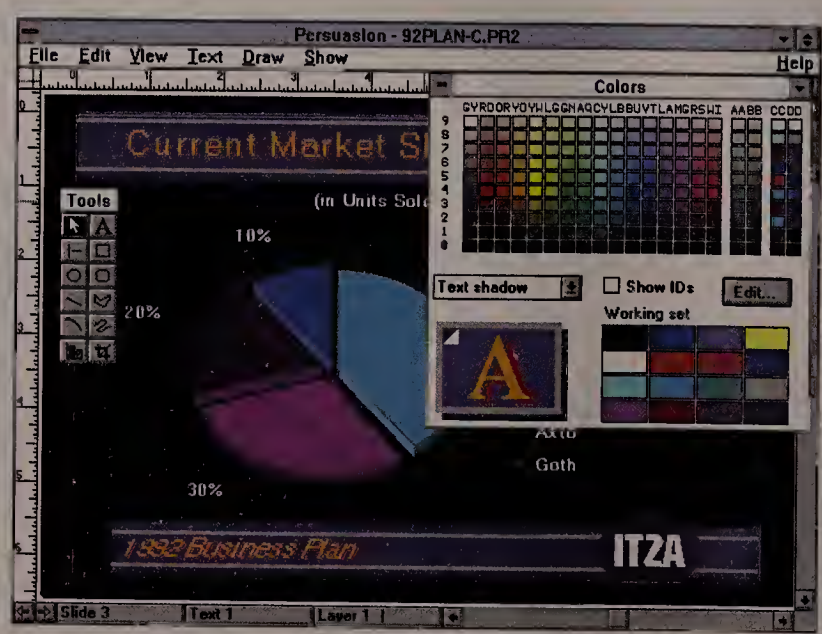
If you're an infrequent presenter and need to keep training time to a minimum, you can't get any more basic than *PowerPoint*. It's not much simpler than *Hollywood*, but that extra bit of ease could make the difference.

Persuasion 2.0 for Windows

PROS: Powerful outliner, excellent predesigned templates
CONS: No context-sensitive help, lacks spreadsheet link

WINDOWS If your slide shows consist of one bulleted chart after another and you're worried you might be starting to repeat yourself, Aldus's *Persuasion for Windows* holds the cure. With numerous text templates, powerful organizational features, and the best outliner in the roundup, *Persuasion* ties *PowerPoint* for second place.

Overall, *Persuasion* is easy to use, offering a sensible system of developing slides in layers that's similar to *Hollywood*'s. But we encountered a few obstacles. For example, you can't open more than one presentation at a time.



Persuasion's strong enhancement tools include shadowed text, versatile templates, and excellent color controls.

Persuasion's hotshot outliner accelerated the planning stage. We selected one of the many master slide formats that offer placeholders for text or graphics. The templates, master controls, and slide sorter were among the best reviewed.

Making text charts proved a lot easier than setting up data charts. *Persuasion* doesn't provide any linking feature, so for updates we had to specify named ranges and cells, reimport data, and regenerate each chart.

Persuasion delivers a full complement of enhancement tools. You get a convenient pasteboard and toolbox similar to *PageMaker*'s, and importing and manipulating images is easy. But *Persuasion* can't perform some fancier drawing tricks, like curve smoothing.

In producing the show, *Persuasion* gave us excellent results. Thanks to the bundled *Adobe Type Manager*, *Persuasion* had no problem producing speaker notes and handouts.

Persuasion is not as easy to use as *PowerPoint*, and it can't match *Hollywood*'s charting and enhancement prowess. But considering that most presentations consist primarily of text, *Persuasion* is a very good value.

(continues)

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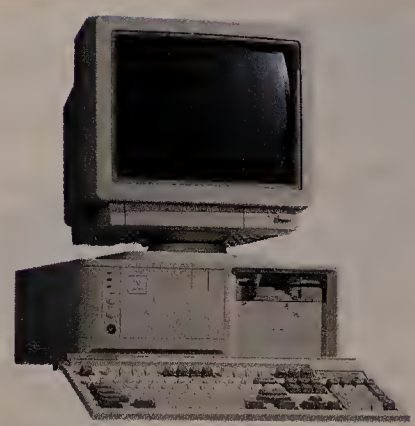

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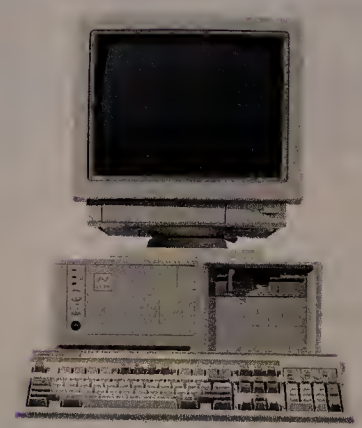

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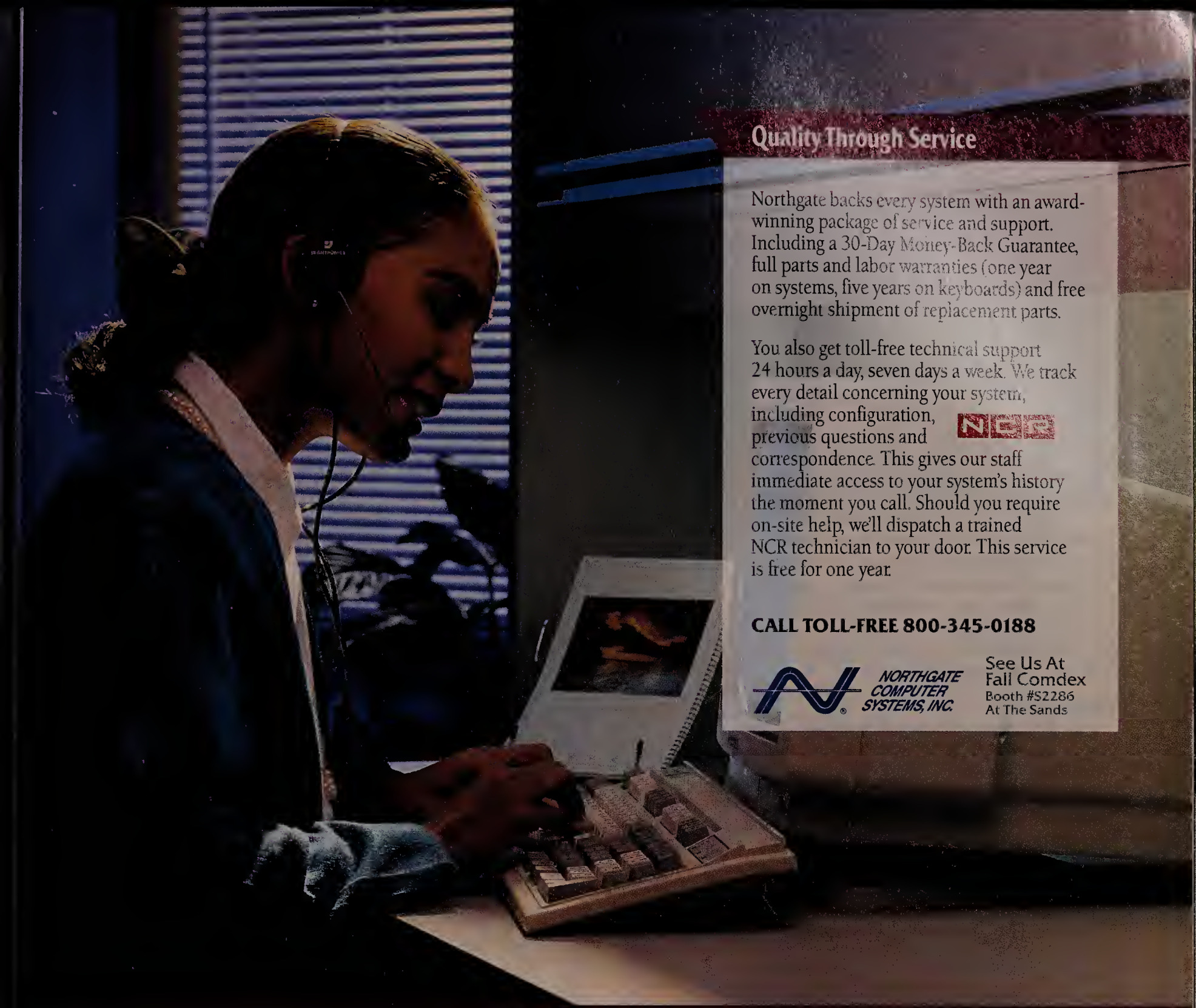

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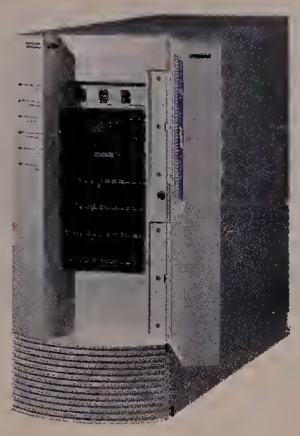

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Presentation Team 2.0

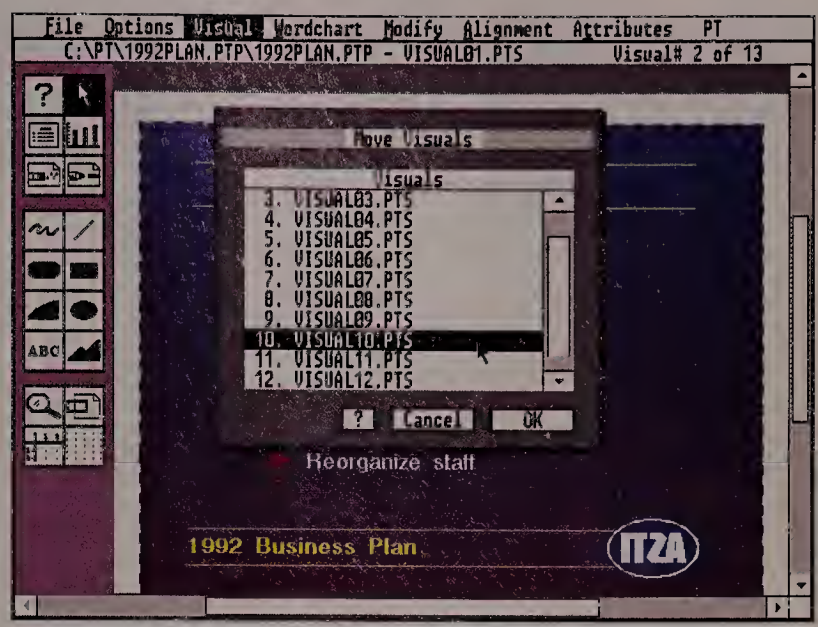
PROS: Easy to use

CONS: Lacks organizational tools, limited charting and enhancement features

Digital Research's *Presentation Team* is fine for basic presentations—its *GEM*-based graphical interface is easy to use and doesn't require the horsepower *Windows* demands. But *Presentation Team* is clearly underpowered for charting and enhancements.

Although *Presentation Team* has no outliner or graphical slide sorter, we could work with a single presentation file and shared master background rather than load a series of images. We couldn't import our outline, so we had to enter the text for each slide. The rudimentary title sorter helped us get an overview of each slide file.

In the charting stage we found *Presentation Team*'s template-driven word charts easy to use, but were disappointed with the program's weak data charting options. We couldn't set up dynamic links to our imported spreadsheets, and the program's chart gallery was limited. For example, there were no preset choices to help us create combination charts or organization charts, and pie charts were limited to a shadow effect rather than a true 3-D perspective.

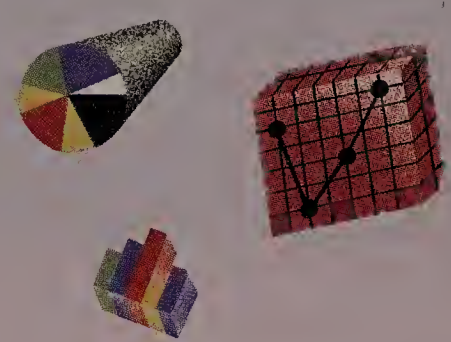


Presentation Team lets you create a master list of slides, but you can display only one slide at a time.

In the enhancement stage, we had to use a separate bundled utility (a customized version of *HiJaak*) to convert our scanned image into a *GEM* file format. Although a good amount of clip art is available, the quality is somewhat below par. Enhancement tools are also fairly limited. For example, we couldn't create shadowed text or add graduated colors to individual objects.

Presentation Team is a snug fit for anyone who uses *GEM Artline* or the *GEM* version of *Ventura Publisher*. But non-*GEM* users will find a better deal elsewhere.

If You Can't Beat 'Em



Relative newcomers to business graphics like Aldus, IBM, and Microsoft will soon be in for some formidable competition as *Windows* versions of industry leaders *Harvard* and *Freelance* hit the streets. Lotus's *Freelance Graphics for Windows* ($495) is due by year's end, and Software Publishing's *Harvard Graphics for Windows* ($595) is expected by February.

Both packages will include the organizational and production aids found in the best *Windows* packages, including outliners, slide sorters, and automatic speaker notes and audience handouts. Both will support *Windows'* Dynamic Data Exchange (DDE) protocol for automatically updating data, and *Freelance* will also have its own version of *Windows'* Object Linking and Embedding (OLE) technology that will let you launch other *Windows* applications from within *Freelance*.

Freelance Graphics for Windows borrows powerful features from its elder, *Freelance Graphics for OS/2*, including the ability to display multiple views of the same presentation. Its customizable floating icon palette will be the same as that used in *Ami Pro* and *1-2-3 for Windows*. You'll be able to choose from a variety of templates that retain formatting information separate from the actual data that you fill in, and new drawing tools will be included.

Key features in the *Windows* version of *Harvard Graphics* include a broader chart gallery and more presentation styles and templates. Its new screen show feature will include hypertext links to other applications for interactive demonstrations, à la *Quattro Pro*.

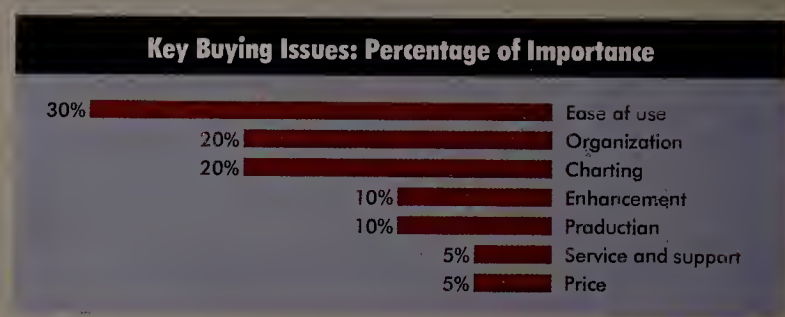
Today, *Hollywood* reigns as the state-of-the-art presentation package. But loyal *Harvard* and *Freelance* users may want to wait and see whether the new *Windows* versions of their favorites can go one step further. If so, a huge migration may be heading for *Windows* graphics.

EXECUTIVE SUMMARY

Hooray for Hollywood!

IBM makes a big splash with its marquee-value graphics contender.

Most business users occasionally need a presentation package—ideally, one that lets you put together a complete show without having to jump through hoops. Best Buy **Hollywood** fits that bill and more, providing sophisticated charts and drawing enhancements. **PowerPoint**, **Persuasion**, and **Harvard Graphics** follow closely behind, nipping at **Hollywood**'s heels.



Excellent ★★★★
Good ★★★
Fair ★★
Poor ★

	Reader service no.	Ease of use	Organization	Charting	Enhancement	Production	Service and support	Price	Overall value
Applause II 1.5	663	☆☆☆	☆☆	☆☆☆	☆☆☆☆	☆☆☆	☆☆☆½	☆☆☆	★★★
CA-Cricket Presents 1.3	664	☆☆	☆☆☆½	☆½	☆☆	☆☆☆	☆☆☆	☆☆☆☆	★★½
Charisma 2.1	665	☆☆	☆½	☆☆☆☆	☆☆☆☆	☆☆☆½	☆☆☆½	☆☆☆	★★★
Freelance Graphics for DOS 4.0	666	☆☆☆	☆☆½	☆☆☆½	☆☆☆	☆☆☆	☆☆☆	☆☆☆	★★★
Harvard Graphics 3.0	667	☆☆☆	☆☆½	☆☆☆☆	☆☆☆½	☆☆☆	☆☆☆½	☆☆½	★★★
Hollywood 1.0	668	★★★½	★★★★	★★★★	★★★★	★★★★	★★★	★★★	★★★★
Microsoft PowerPoint for Windows	669	☆☆☆☆	☆☆☆½	☆☆½	☆☆½	☆☆☆	☆☆☆½	☆☆☆	★★★½
Persuasion 2.0 for Windows	670	☆☆☆	☆☆☆☆	☆☆☆	☆☆☆½	☆☆☆½	☆☆☆	☆☆☆	★★★½
Presentation Team 2.0	671	☆☆☆	☆½	☆½	☆☆½	☆☆	☆☆☆	☆☆☆	★★½

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing those results, and rounding to the nearest half number.

WHERE TO BUY

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213/329-9989
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Reader service no. 663

CA-Cricket Presents 1.3
Computer Associates
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Garden City, NY
11530
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Charisma 2.1
Micrografx Inc.
1303 Arapaho
Richardson, TX 75081
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214/234-1769
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Freelance Graphics for DOS 4.0
Lotus Development Corp.
55 Cambridge Pkwy.
Cambridge, MA
02142
800/343-5414,
617/577-8500
LIST PRICE: $495
Reader service no. 666

Harvard Graphics 3.0
Software Publishing Corp.
3165 Kifer Rd.
P.O. Box 54983
Santa Clara, CA
95056-0983
408/986-8000
LIST PRICE: $595
Reader service no. 667

Hollywood 1.0
IBM Desktop Software
472 Wheelers Farms Rd.
Milford, CT 06460
800/426-7699
LIST PRICE: $495
Reader service no. 668

Microsoft PowerPoint for Windows
Microsoft Corp.
1 Microsoft Way
Redmond, WA 98052
800/426-9400,
206/882-8080
LIST PRICE: $495
Reader service no. 669

Persuasion 2.0 for Windows
Aldus Corp.
411 First Ave.
Seattle, WA
98104-2871
206/622-5500
LIST PRICE: $495
Reader service no. 670

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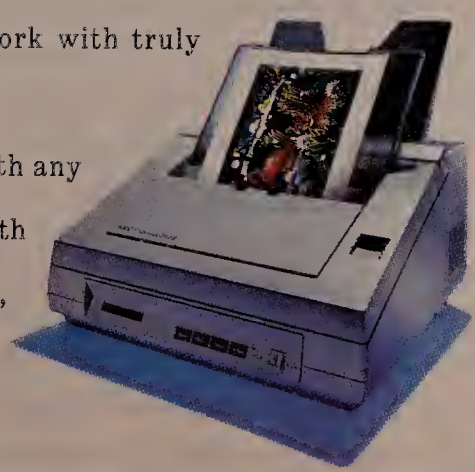

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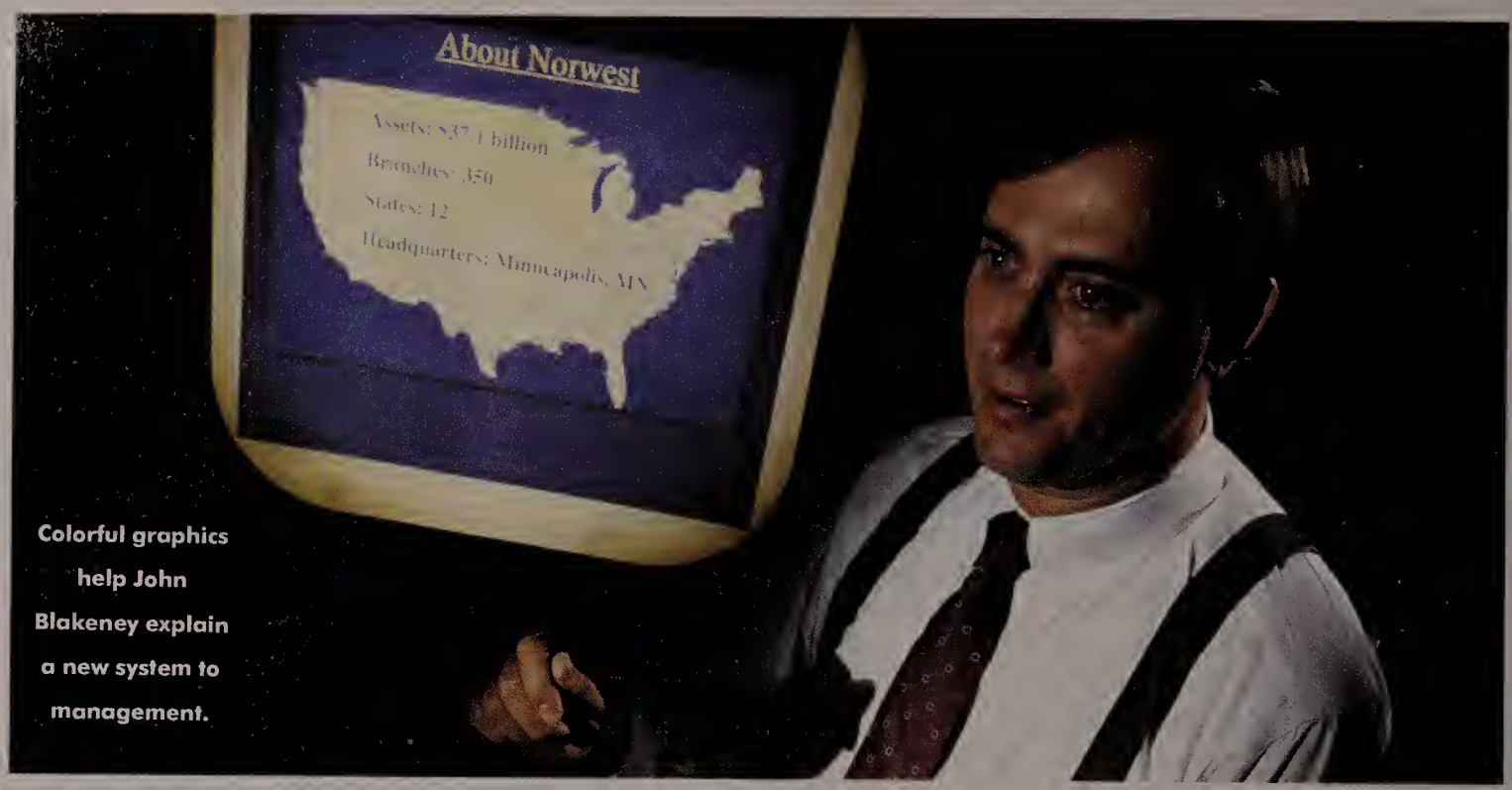

Colorful graphics help John Blakeney explain a new system to management.

In-House Presentations PAY OFF

When you work in a big company, meetings are your life. Here's how financial giant Norwest uses PC-based presentation and communications tools to make meetings more effective.

Bronwyn Fryer

You're a division vice president in a 24,000-employee company. You have 20 minutes to explain, illustrate, justify, and answer questions about a sophisticated $20 million project to the board of directors. Ready? Go.

That was the challenge faced a few months ago by John Blakeney, vice president of distributed technologies for Norwest, the 17th-largest financial services company in the United States. Giving presentations to top management is like having an audience with the king, says Blakeney. "They want to know what your proposal is, what it does, what it costs, and why the company needs it. You need to grab 'em and get the message across clearly and quickly."

That presentation went off without a hitch, and the board approved the giant project. Blakeney's recipe for success? Blend one part savvy planning with one part bottom-up sell for several months. A few days before the presentation, mix in data from a variety of *Windows*-based applications. Flavor with last-minute changes and sprinkle with clip art; bake in color and serve *hot*.

Communication Challenges

Based in Minneapolis, Norwest is a financial management octopus, with tentacles in ten divisions, dozens of operating units, and 1525 national and international offices. In this highly diversified and entrepreneurial company, teamwork rather than top-down dictatorship is the basis for decisions. "This is a business of people and ideas, and we have to have meetings to get anything done," notes Blakeney. A typical Norwest manager, Blakeney spends a third of his working life in meetings. The more effectively he communicates, the better for him and for Norwest—and the shorter the meeting.

In the days before PCs, communication and presentation methods at Norwest were almost medieval. Fat, labor-intensive paper memoranda and proposals were circulated but read only un-

STEVE NEIDORF

der duress. Presenters would glue Croy lettering onto transparencies by hand; if a number changed, the transparency would have to be redone. But by 1987 PCs had been installed on half of the company's desktops, and financiers became *1-2-3* addicts. "The Lotus print graph was still pretty crude because all you'd see was plain numbers, but people were excited anyway because they had never before had access to current information," explains systems manager Jon Laberee.

With today's powerful PC presentation packages, such as *Harvard Graphics* and *PowerPoint*, highly graphical slide presentations have become a way of life in almost every Norwest department. For example, while the ink dries on one of Norwest's frequent acquisition agreements, the department staff generates a color map using *Harvard Geographics* on a PC to show employees the location of the acquired company. When federal regulations change, the investor relations department delivers a slide presentation to company staff and outside investors. And John Blakeney uses his presentations to "sell" his division's technology solutions to Norwest's board of directors—as well as to the managers of Norwest's 340 branch banks.

The Bottom-Up Sell

In 1990 Blakeney's division, Norwest Technical Services, developed a prototype of a *Windows*-based system that allows bankers in the company's 337 banking locations to serve customers faster. Blakeney hit the road to generate interest in funding the proposed project, taking along a slide presentation developed in *PowerPoint* and a demonstration of the application. The presentation helped him communicate complex technical concepts to his audience of financiers. "Automation is not something most bankers want to deal with," says Blakeney. "With graphics, you can help them connect with technical concepts at the visual level, and that's the quickest way for anyone to understand."

During the question and answer portion of the presentation, Blakeney's audience expressed apprehension about the acceptance of the new system within the banks. To allay their fears, Blakeney demonstrated the proposed system directly from an IBM P/70 portable minicomputer on a 30-inch Sony projection device. The demonstration showed them how friendly the *Windows* interface could be. "I showed them how easy it is to point and click," he recalls. "It was extraordinarily effective." By the time he was ready to take the idea to the board, the pilot system was up and running at five branches.

Perfect Pitch

Blakeney's next challenge was convincing senior management to finance installation of the system in the remainder of Norwest's banks. He prepared for the meeting by asking senior business funding staff to brief him on the board's hot buttons—what the system would do, what it would cost, and what the benefits would be. Based on this information, he developed an outline of the presentation in *PowerPoint*, using the Notes function to provide the verbiage. Then he printed the presentation and circulated it among his contacts for feedback.

Once comments were in, he streamlined the presentation to make it easy for people who are long on pressure and short on time to visualize the benefits of the branch automation project. Project manager Michael Levine, a presentation whiz, flavored the slides with relevant numbers pulled from *Excel* spreadsheets, Gantt charts created by *Project*, and text generated in *Word for Windows*. He tied it all together with *PowerPoint* on his IBM PS/2. Because pictures are more effective than text, Levine used clip art instead of nouns wherever possible. For example, instead of spelling out the names of states where the banks were located, he showed a map of the United States highlighting the states with color. "We kept refining it, changing concepts, ideas, and numbers right up until a few hours before the presentation," notes Levine.

For technical audiences, Blakeney likes to run his *PowerPoint* presentation directly on a PC connected to a large-screen monitor. But he feels that even the highest-resolution big screens are still "too grainy" for an executive audience. For most high-level presentations, he prefers the smoothness and polish of slides.

In the case of this presentation, Blakeney needed to incorporate last-minute information, which ruled out slides. Instead, he used color transparencies. "Board members like the immediacy and the spontaneity of overheads, as well as the color and consistency of a slide presentation. Color overheads give both."

During the presentation, notes Blakeney, "you could have heard a pin drop." Blakeney's $20 million project got the green light. He credits the success of his pitch to a carefully orchestrated message "designed to give the

(continues on page 212)

PROBLEM:

- Communication difficulties in large, diversified company
- Need for frequent meetings
- Need to get messages across quickly and effectively

SOLUTION:

- Bottom-up sell
- Graphical PC presentation software
- Well-planned presentations
- Video conferencing center

BENEFITS:

- Easy for nontechnical staff to understand
- Fast, effective communication
- Video conferencing center saves on airfare

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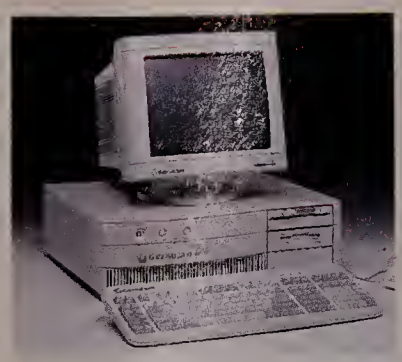


The Gateway 2000 33-MHz 386VGA and AST Premium Exec 386SX/20 were the most aggressively priced desktop and portable PCs in the latest survey by International Data Corporation.

Best-Sellers

Leading PCs sold through traditional computer channels

1 *IBM PS/2 Model 55 SX*	6 *Compaq Deskpro 386s/20*
2 *IBM PS/2 Model 70 (20-MHz)*	7 *Compaq Deskpro 386/20e*
3 *Compaq LTE 386s/20*	8 *Compaq Deskpro 386n*
4 *NEC PowerMate SX, SX/20*	9 *Compaq Deskpro 386s*
5 *IBM PS/2 Model 30-286*	10 *IBM PS/2 Model 50 Z*

IBM and Compaq continue to lead sales through the dealer channel, but NEC's SX line jumped to fourth place, according to Storeboard/Computer Intelligence's latest survey.

BARGAINS OF THE MONTH

Over the Counter

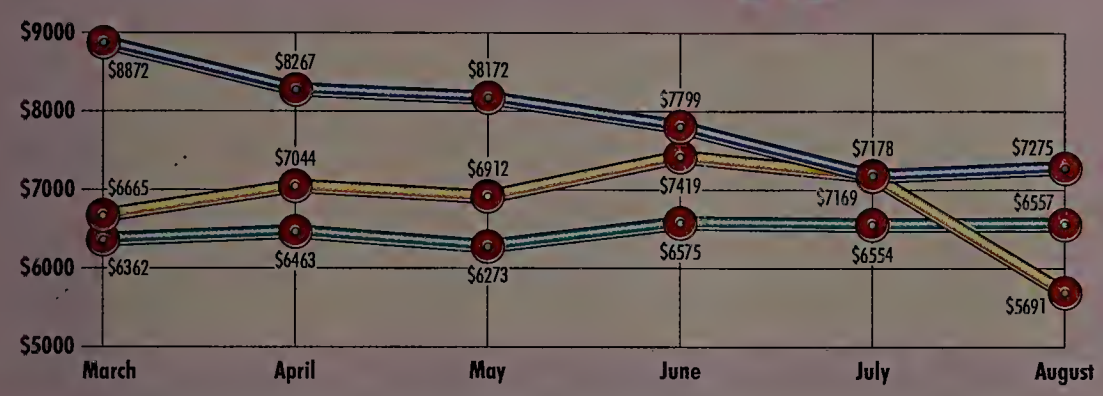
What you pay at retail stores for popular PCs

	Configuration				National				
	Speed (MHz)	RAM (MB)	Hard disk (MB)	Video adapter	List	Average	Boston	Chicago	Dallas/ Ft. Worth
80386SX-based desktop PCs									
AST Brovo 386SX/20	20	2	40	VGA	$2395	$1871	$1879	$1802	$1830
Compaq Deskpro 386s	16	2	40	VGA	$2299	$1858	$1747	$1884	$1865
Compoq Deskpro 386s/20	20	2	60	VGA	$2599	$2115	$1975	$2153	$2109
Dell System 320 SX	20	2	40	VGA	$1700	$1700	$1700	$1700	$1700
Epson Equity 386SX/20 Plus	16	2	40	VGA	$3099	$2345	$2131	$2372	$2324
IBM PS/2 Model 35 SX-043	20	2	40	VGA	$2525	$1911	$1879	$1857	$1800
NEC PowerMote SX/20	20	2	42	none	$2199	$1687	$1715	$1697	$1569
80386DX-based desktop PCs									
AST Premium 386/25	25	2	110	VGA	$5595	$4312	$4532	$4210	$4275
Compaq Deskpro 386/33L	33	4	120	VGA	$6199	$5004	$4891	$5031	$4982
Dell System 333P	33	4	100	VGA	$3000	$3000	$3000	$3000	$3000
Epson Equity 386/25 Plus	25	2	100	VGA	$3879	$2950	$2920	$3016	$2909
Goteway 2000 33-MHz 386VGA	33	4	200	VGA	$2320	$2320	$2320	$2320	$2320
IBM PS/2 Model 70-A16	25	4	160	VGA	$6445	$4804	$4800	$4635	$4593
Tondy 4033 LX	33	2	105	VGA	$4398	$4398	$4398	$4398	$4398
80486SX-based desktop PCs									
ALR BusinessVEISA	20	5	120	none	$4295	$3346	n/a[1]	$3343	$3410
AST Premium II 486SX/20	20	4	80	VGA	$3495	$2742	$2893	$2630	$2656
IBM PS/2 Model 90XP-OG5	20	4	80	XGA	$8345	$6243	$6202	$6010	$5946
80486DX-based desktop PCs									
AST Premium 486/25E	25	4	110	VGA	$8595	$6557	$6523	$6468	$6567
Compaq Deskpro 486/33L	33	4	120	VGA	$8999	$7275	$7074	$7348	$7233
IBM PS/2 Model 95 XP	33	4	320	XGA	$16,445	$12,298	$12,188	$11,999	$11,718
NEC PowerMote 486/25E	25	4	140	none	$7399	$5691	$5756	$5710	$5364
Portables/laptops									
AST Premium Exec 386SX/20	20	2	40	VGA-LCD	$3395	$2658	$2771	$2555	$2594
Compoq LTE/286	12	640K	20	CGA-LCD	$1949	$1599	$1536	$1623	$1566
Compoq LTE 386s/20	20	2	30	VGA-LCD	$4399	$3826	$3919	$3858	$3853
Dell System 320LT	20	2	40	VGA-LCD	$2999	$2999	$2999	$2999	$2999
IBM PS/2 Model L40 SX	20	2	60	VGA-LCD	$5245	$3976	$3885	$3941	$3738
NEC UltraLite 286F	12	1	20	CGA-LCD	$2199	$1705	$1667	$1697	$1594
Toshibo T1200XE	12	1	20	CGA-LCD	$2299	$1851	$1852	$1931	$1911
Toshibo T2000SX	16	1	40	VGA-LCD	$3749	$3026	$3093	$3149	$3141
Zeos Notebook 386SX-20MHz	20	1	60	VGA-LCD	$2995	$2995	$2995	$2995	$2995

From an IDC survey of more than 180 computer deolers in eight metropolitan areas. Figures based on at least four price quotes for eoch machine. Prices ore bosed on monufacturer's stondard configuration without monitor. [1]IDC was unable to collect enough price quotes for this model in this metropolitan area due to limited dealer coveroge.

Trend Line: 486 Desktop Systems

Street pricing on selected 486 models



Pricing on 486 systems this year has been a mixed bag that primarily reflects the way products are positioned by each vendor. Like other Compaq systems, the 486/33L has undergone big cuts in both list and street prices in recent months. AST has held the line with its aggressively positioned 486/25E. The cost of NEC's PowerMate 486/25E wavered and then fell in late summer when the manufacturer chopped prices.

opolitan

Los Angeles	Miami/ Ft. Lauderdale	New York	San Francisco Bay Area	Washington, D.C.
$1918	$1796	$2072	$1742	$1772
$1908	$1779	$1897	$1818	$1893
$2160	$2002	$2229	$2085	$2136
$1700	$1700	$1700	$1700	$1700
$2293	$2529	$2510	$2256	$2333
$1894	$1987	$2057	$1839	$1924
$1649	$1781	$1660	$1605	$1700

$4200	$4196	$4401	$4197	$4186
$5250	$4747	$5156	$4749	$5113
$3000	$3000	$3000	$3000	$3000
$2870	$2961	$3142	$2806	$2917
$2320	$2320	$2320	$2320	$2320
$4834	$4692	$5125	$4834	$4970
$4398	$4398	$4398	$4398	$4398

$3221	$3374	$3548	$3222	$3153
$2803	$2621	$2890	$2621	$2699
$6259	$6166	$6675	$6259	$6474

$6459	$6446	$6515	$6554	$6360
$7648	$6892	$7455	$6855	$7396
$12,334	$12,281	$13,055	$12,334	$12,686
$5549	$5993	$5975	$5401	$5359

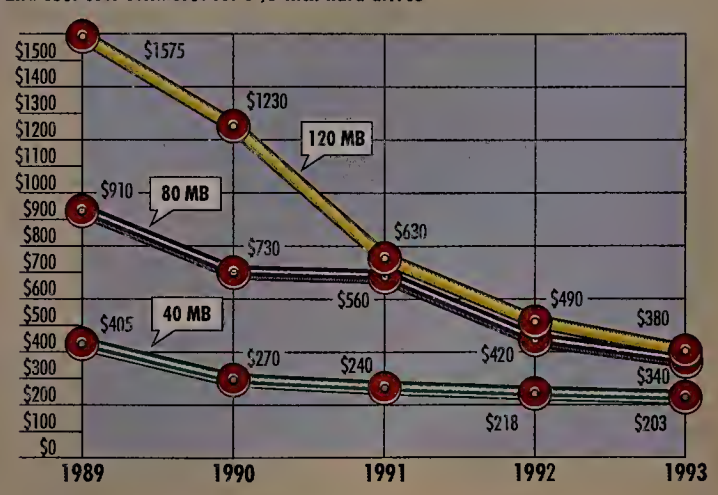
$2626	$2546	$2805	$2614	$2598
$1659	$1547	$1733	$1514	$1613
$3923	$3768	$3866	$3498	$3801
$2999	$2999	$2999	$2999	$2999
$3934	$4130	$4243	$3945	$3997
$1656	$1765	$1777	$1613	$1696
$1789	$1919	$1789	$1857	$1778
$2816	$3036	$3088	$3001	$2947
$2995	$2995	$2995	$2995	$2995

PC Futures: Down in the Fall

Gateway 2000's 33-MHz 386VGA is the desktop Bargain of the Month,[2] while AST scores another win—this time with the Premium Exec 386SX/20, the portable Bargain of the Month. The veteran PS/2 55 SX remains the best-seller champ despite new 386SX alternatives from IBM. Overall, PC suppliers still face unusually strong pricing pressure; some market researchers expect total U.S. unit sales to drop this year for the first time since the mid-1980s. Over the long haul, cost pressures will be further heightened by new CPUs from both Intel and AMD (whose 386-compatible family is now showing up in products from major vendors—see "AST Notebook Breaks the Rules"). Systems incorporating these CPUs should begin showing up in force early next year. And as disk drive manufacturers reach very high volumes of production on 3½-inch hard disks, costs on those are plunging as well.

Hard Drives Get Easier Pricetags

End user cost estimates for 3½-inch hard drives



While prices on 40MB drives are close to bottoming out, the costs of other standard drives continue to fall substantially. International Data Corporation projections show costs of 120MB drives plummeting so rapidly that next year these models will carry only a $70 premium over 80MB drives, whose costs will average $420.

[2]Bargains of the Month are determined by adjusting prices on PCs of a given class for standard memory and storage, then finding which PC compares best.

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Circle 323 on reader service card

Videoconferencing Pulls It Together

Videoconferencing centers allow Norwest employees in Minneapolis to meet with colleagues in other offices on a regular basis. Instead of spending an average of $3000 for three people to travel to the Des Moines office, Norwest spends $568 for a two-hour conference that groups from both offices can attend.

board the presentation they wanted, the way they wanted it. And it paid off for the whole company."

No More Airports

Blakeney's fundraising junket didn't come cheap: With round-trip airfare, meals, hotel rooms, and other expenses, even a simple one-day jog from Minneapolis to the Des Moines office adds up to about $1000 per employee.

Fortunately, Norwest has found a way to lower the price of travel while increasing the effectiveness of meetings. Instead of catching a plane, Blakeney and the NTS staff now meet with colleagues in Des Moines or Denver in the company's videoconferencing centers. A two-hour videoconference, in which any number of staffers at both sites can participate, costs $568—making it both more convenient and more cost-effective. "We don't need to book flights anymore; we just flick some switches," says Blakeney.

Norwest's videoconference rooms are outfitted with System CS425, a digital compression "black box" from VideoTelecom of Austin, Texas. The system incorporates an AT-compatible 386SX with 40MB hard drive, proprietary communications software, and an acoustic echo cancellation device. Attached are two 25-inch Sony PVM monitors, three video cameras, six microphones, a PC keyboard, and a point-and-click input tablet called Pen Pal.

Pen Pal lets users control communications with the remote site, including the operation of the remote cameras and computers. When a presenter in Minneapolis places materials on Pen Pal and zooms in on them with a video camera, staffers in Des Moines can see them as clearly as if they had them in their own hands. And when a manager in Denver wants to show spreadsheet data to a colleague in Des Moines, she runs a floppy disk from the PC or accesses data stored on a LAN. The colleague views the application on the conference room monitor.

Faster, Better Meetings

Aside from saving Norwest thousands of dollars a month in airfare, videoconferences have vastly improved intercompany communication, says Greg Lown, who manages the videoconference center. Because anybody can take part in a videoconference, "people now see the information firsthand instead of getting a report after the meeting," he notes.

As financial management companies go, says Blakeney, Norwest is unusual in its aggressive use of PC technology to improve communication. Recently, Blakeney's boss asked him to form a presentation task force. "We've had so much success in improving our communications through presentations that we're setting up a task force to develop a presentation standard for the corporation," he notes. "We want to show how selling internally using PC technology lets us create a better company."

Bronwyn Fryer is an associate editor for PC World.

Smartcom Exec,™ the newest communications software from Hayes, is remarkably easy to operate. In fact, Computer Shopper said "Many people...will be able to install and use the program without touching a book, because the interface is quite self-explanatory and help is just a function key away."

And yet, Smartcom Exec is also highly advanced. It features everything from the most popular terminal emulations and file transfer protocols to a peruse buffer and a powerful on-line text editor with many word processing capabilities.

Its handy Phone Book data base stores calling information automatically. It has mouse support for point-and-click operation. And its powerful SCOPE™ scripting language lets you write programs for repetitive tasks like unattended operation and automatic log-ons.

What's more, PC Week said it has the best LAN support of any software they've tested.

All of which is why Smartcom Exec received PC Magazine's prestigious Editors' Choice Award, Micro Decision's Gold Award, and was named a Buyer's Choice by Computer Reseller News.

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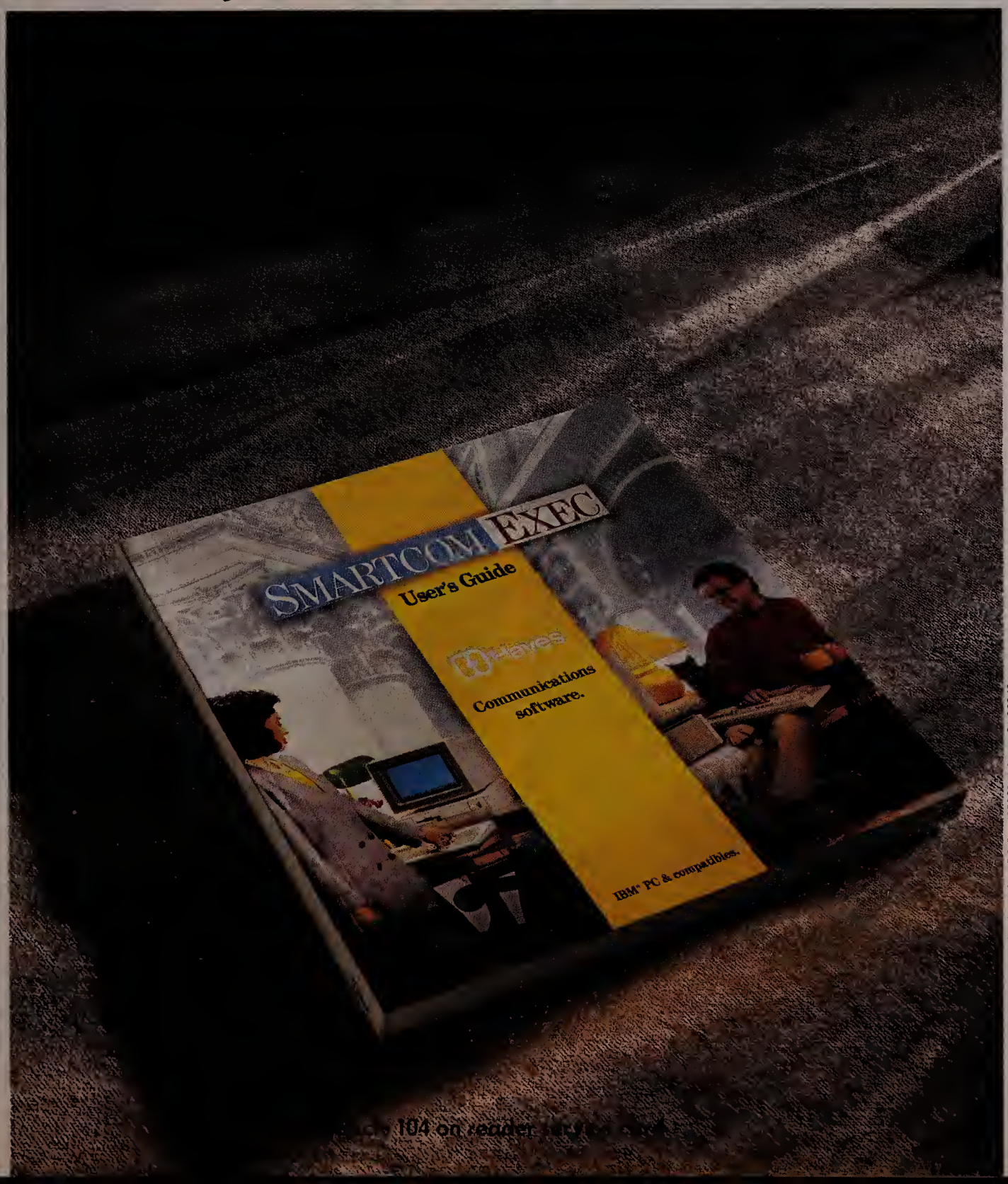

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104 on reader service card

YESTERDAY'S PLAYTHINGS HAVE BECOME TODAY'S TOOLS OF CHOICE FOR THE DESKTOP PUBLISHER

HAND SCANNERS

PATRICK MARSHALL

Thanks to higher resolutions, more gray shades, and wider color ranges, hand scanners are now being used effectively not only for newsletters but for spot art in newspapers, corporate reports, and magazines. Hand-held scanners fall short of desktop scanners: They have neither the resolution nor the tonal range needed to produce magazine-quality photo images. But all are well suited to the limited capabilities of desktop laser printers.

While only the Niscan Spectra claims to reproduce the 16.8 million colors common with desktop scanners, most are now very competitive in gray-scale capabilities and image resolution. Hand scanners are also cheaper than desktop models, more easily stored, and better able to scan books.

Which is not to say that hand scanners can go head-to-head with desktop models. The hand-held models' most obvious weakness is that, unlike flat-bed scanners, where you simply place the image on the scanner and go, they must be drawn across the image carefully and steadily. The inevitable result is that you must often retake scans.

A related problem is that the narrower coverage of hand scanners means that to scan a page-size image, you have to make at least two scans and combine the images. That can be tricky, especially for line art. So if you expect to do many large scans, you're probably better off paying more for a desktop scanner.

ROBERT CARDIN

PLANNING FOR THE SCANNING

MAXIMUM SCAN SIZE

The majority of hand scanners can handle an image 4 inches wide in a single pass, but you should also note the maximum length that can be scanned. Scan lengths range from 6 to 20 inches, depending on resolution and amount of computer memory. At 200 dpi, a 4-inch-wide scanner requires more than 3.2MB to scan 20 inches down. Models that scan directly to disk allow a virtually unlimited length, but you'll still need a lot of system memory to load a long image into your editor.

RESOLUTION

Scanner makers play up their products' high resolutions; units here reach a level of 400 dpi, with one model at 800 dpi. But the fact is, resolutions beyond 300 dpi are rarely used and can even be detrimental. Scanning at resolutions higher than your printer can handle simply wastes disk space and adds to printing time.

All the hand scanners listed here—with the exception of the Marstek ColorArtist—offer resolutions of at least 300 dpi, which is the maximum resolution of a laser printer and of most color printers. In fact, you're not likely to notice much difference between images scanned at 200 dpi and 300 dpi on a laser printer. Hand scanners are generally unsatisfactory for the higher resolutions that enlargements, color slides, and commercial laser typesetters require.

Other things being equal, you should lean toward scanners that let you adjust resolution in small increments. If you're willing to experiment, you'll be able to maximize

LOGITECH
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print quality while minimizing the print time and disk space eaten by image files.

MAXIMUM GRAY SHADES

If you've decided you don't need a color scanner, you still have to decide between the two kinds of black-and-white scanners: monochrome and true gray scale. Monochrome scanners use only one bit of information to describe each pixel in a scan, so they are actually scanning in black-and-white. Such scanners achieve halftone effects through software *dithering*—using patterns that adjust the proportion of black dots to white space.

Dithering is inferior to gray scale for halftone imaging, and most single-bit scanners can simulate only 32 shades of gray through dithering. True gray-scale scanners can reproduce as many as 256 shades of gray by using 8 bits to describe each pixel. Though most laser printers and VGA boards can display only 64 shades of gray—one-quarter the 256 shades available from 8-bit scanners—true-shade images on a laser printer nearly always look better than dithered images. Of course, if you're using the scans for slides or printing on a higher resolution printer, you'll be able to take full advantage of the better shading capabilities of a true gray-scale scanner.

MAXIMUM COLOR

Because most color hand scanners use the same internal hardware, there's not a lot of difference in actual scanning quality. What you will find are trade-offs between number of colors, resolution, and scan length. For example, if being able to scan 16 million colors is your top priority, you'll have to settle for the relatively short 6-inch scan of the Niscan Spectra. Other than that, your choice of color scanner will depend on the software it comes with and how the unit feels.

Color scanners have the ability to also produce true gray shades. For most applications, 64 shades at 200 dpi is satisfactory, and most color scanners can reach 256 shades of gray at 200 dpi. If you expect your applications to include a mix of color and gray-scale images and to require higher resolutions than 200 dpi, you'll need a dedicated gray-scale scanner as well.

EASE-OF-USE FEATURES

Speed indicators, scan locks, and real-time displays can tip the scales for some users. A speed indicator is a light on the scanner that flickers when you're scrolling too fast. A scan-lock button makes it easier to scan smoothly, and a real-time display lets you check quality as you scan.

FILE FORMAT COMPATIBILITY

All the hand scanners here, and most editing packages, support TIF and PCX file formats. If you expect to use other file formats, such as Encapsulated PostScript, you'll need a scanner package that supports them, or file conversion software.

IMAGE EDITOR

The software bundled with your scanner is designed for the scanner's range of resolutions and colors but is otherwise interchangeable. For example, if you buy Logitech's ScanMan 256, you can forgo the Ansel image editor that comes with it and buy Astral Development's *Picture Publisher* for its special masking technique, or just because you prefer the way it's designed.

Now that the two most popular desktop publishing programs, *Ventura Publisher* and *PageMaker*, are available in *Windows* versions, an impor-

HAND-HELD SCANNERS

Manufacturer	Product	Price	Max. scan size, width/length
MONOCHROME			
Caere	Typist	$595	5" x disk space
The Complete PC	Half-Page Scanner/400	$299	4.1" x 14"
New Dest	Personal Scan	$995	8.5" x 14"
DFI	Handy Scanner 3000 Plus	$359	4.2" x 20"
KYE Int'l	GS-4500	$239	4" x 10"
Logitech	ScanMan Model 32	$299	4.1" x disk space
Marstek	M-800	$399	4.13" x 11"
Mouse Systems	PageBrush/32	$239	4.13" x 11.5"
GRAY SCALE			
A4Tech	A4Gray	$349	4" x 14"
The Complete PC	Half-Page Scanner/GS	$349	4.1" x 14"
KYE Int'l	GS-B105G	$399	4" x 10"
Logitech	ScanMan Model 256	$449	4.1" x 20"
Nisca	Niscan/GS for Windows	$399	4.2" x 11"
	Niscan/GS for DOS	$369	4.2" x 11"
COLOR			
A4Tech	A4Color Scanner	$599	2.75" x 9"
DFI	CHS-4000	$695	4.13" x 20"
KYE Int'l	GS-C105 Plus	$799	4" x 10"
Marstek	ColorArtist	$695	4.13" x 11"
Migraph	CS-4096	$895	4" x 14"
Mouse Systems	PageBrush/Color	$849	4.1" x disk space
NCL America	ClearScan Color	$695	4" x 11"
Nisca	Niscan Spectra	$995	4" x 6"

[1] Omnifont software.
[2] Extra-cost option.

Resolution (dpi)	Real-time display of scan	Shades of gray	Colors	Speed indicator light	Scan-lock button	File formats	Image editor	Merge/ stitch	OCR software	Warranty (years)	Reader service number
300	N	0	n/a	N	N	PCX, TIFF	N	Y	OmniPage[1]	1	642
200–400	Y	16	n/a	N	Y	CUT, TIFF, PCX, IMG, MSP	SmartScan (DOS)	Y	ReadRight[2]	2	643
100–400	Y	64	n/a	Y	Y	IMG, MSP, PCX, BMP, EPS, TIFF, MacPaint	Image-In (Windows)	Y	Recognize[1]	1	644
100–400	Y	32	n/a	Y	N	PCX, TIFF, MSP, IMG, CUT	PC Paintbrush Plus (DOS)	Y	CAT Reader Pro[2]	1	645
100–400	Y	32	n/a	Y	N	TIFF, PCX, CUT, IMG, MSP, OCR	ScanEdit II (DOS)	Y	CAT Reader[2]	3	646
100–400	Y	32	n/a	Y	N	IMG, TIFF, PCX	GrayTouch (DOS)	Y	CatchWord[2]	1	647
100–800	Y	64	n/a	Y	N	PCX, CUT, IMG, TIFF, MSP, PIX for DOS	Image-In (Windows) PC Paintbrush Plus (DOS)	Y	DOS-CAT Reader, Windows Perceive	1	648
100–400	Y	32	n/a	Y	N	PCX, CUT, EPS, TIFF	ScanEdit (DOS)	Y	Prodigy OCR	2	649
100–400	Y	256	n/a	Y	Y	TIFF, PCX, IMG, MSP, CUT, VMG, GIF, SCF, PMC	Image 256, Image 72 Plus (DOS)	Y	AIOCR	1	650
100–400	Y	256	n/a	N	Y	TIFF, PCX, EPS, IMG, MSP, BMP	Image-In (Windows)	Y	none	2	651
100–400	Y	256	n/a	Y	N	TIFF, CUT, IMG, MSP, PCX	Color Maestro (DOS), iPhoto for Windows (optional)	Y	CAT Reader[2]	3	652
100–400	Y	256	n/a	Y	Y	PCX, BMP, EPS, TIFF	Ansel (Windows)	Y	CatchWord[2]	lifetime	653
25–400	Y	256	n/a	N	Y	IMG, PCX, TIFF, MSP, MacPaint, EyeStar	Image-In Plus (Windows), Scan & Paint (DOS and Windows)	Y	Perceive Personal	1	654
25–400	Y	256	n/a	N	Y	IMG, PCX,TIFF	ScanXpress (DOS)	Y	CAT Reader[2]	1	655
300	Y	256 at 200 dpi	262,144	N	N	VMG, TIFF, PCX, SCF, GIF, PMC, CPL	Image 256 (DOS)	Y	none	1	656
100–400	Y	256 at	256 at 200 dpi	Y 200 dpi	N	TIFF, PCX	PC Paintbrush IV Plus (DOS)	Y	under development	1	749
100–400	N	256 at	256 at 200 dpi 16 at 400 dpi	Y 200 dpi,	N	TIFF, PCX	Color Maestro (DOS), iPhoto for Windows[2]	Y	CAT Reader[2]	3	657
50–200	Y	64	262,144	N	Y	PCX, TIFF, TGA, CUT, IMG, MSP	Rainbow Paint (DOS) ScanKit Color (DOS)	Y	Perceive Personal	1	658
100–400	N	256 at 200 dpi	4096 at 200 dpi	Y	N	TIFF, TGA, PCX, GIF, CPI, BMP, EPS	Picture Publisher Plus, ImagePrep (Windows)	Y	under development	6 mos. on hardware, 30 days on software	659
100–400	N	64	4096 at 200 dpi, 16 at 400 dpi	Y	N	GIF, PCX, TIFF, EPS, TGA, BMP, CPI	ImageQuest, ImagePrep	Y	none	2	660
100–400	N	256 at 200 dpi	4096 at 200 dpi	Y	N	TIFF, PCX	PC Paintbrush IV Plus (DOS)	Y	none	1	661
50–400	Y	256	16 million	N	N	TIFF, CPI, BMP, GIF, EPS, PCX, TGA (Windows), PCX, TGA, VMG (DOS)	Color Lab (Windows), ScanRIX and ColoRIX VGA (DOS)	Y	none	1	662

For more information about all products in this table, circle reader service no. 904.

tant scanner consideration is whether the bundled software is *Windows* compatible. And if you're considering buying an image editor separately, be sure to choose one that matches your scanner's capabilities. That is, don't go the cheap route and select a 256-color editor if you've got a 4096-color scanner or spend a bundle on an image editor that exceeds the capabilities of your scanner.

MERGE CAPABILITY

Image editors vary in their ability to stitch scans together. There's generally more room for mistakes when merging halftone images than when merging line art. Of course, if you think you'll need a lot of stitching, you need a full-page scanning unit.

OPTICAL CHARACTER RECOGNITION (OCR)

Some of the hand scanners listed here come bundled with OCR software. Unfortunately, hand scanning text requires an even steadier touch than scanning images, and stitching together text scans is more difficult.

There are two types of OCR software: font recognition and omnifont. The former must be "taught" by repeatedly scanning and correcting individual characters in each new font. Omnifont is more flexible but is available only with New Dest's Personal Scan and Caere's Typist, both designed primarily for scanning text. The New Dest Personal Scan is actually a full-page scanner with a scan head that can be removed to scan books. Caere's Typist is a more traditional hand-held unit but has a roller and a wider, 5-inch head that does a good job of keeping the unit straight during a scan. The Typist is bundled with a version of Caere's highly regarded *OmniPage* omnifont software.

SCANNER IMAGES illustrate quality of capture. The two black-and-white portraits, both scanned at 400 dpi, compare an image dithered to simulate 32 shades (left) with a 256-gray-scale image. The images were captured using Logitech ScanMan 32 and ScanMan 256 hand scanners, producing files of 21K and 1.7MB, respectively. The line art wrench, also scanned at 400 dpi, required 77K. The 256-color portrait scanned at 200 dpi took 100K.

With the exception of the New Dest and Caere products, OCR packages that work with hand scanners are, like image-editing software, largely interchangeable. So unless you want a specialized text hand scanner, it makes little sense to base your hand scanner selection on whether it includes OCR software.

PUTTING IT TOGETHER

The secret to selecting a hand scanner is compromise. If you're considering a hand scanner rather than a desktop scanner, you've already compromised by giving up a large, steady scanning surface in favor of the affordability and portability of a hand unit. You may have to make similar compromises in selecting among hand scanners, because there's no single product that does it all.

Patrick Marshall is managing editor of National Security Syndicate, an articles service for newspapers in Washington, D.C.

WHERE TO BUY

A4Tech, Inc.
232 Boulevard #3
Hasbrouck Heights, NJ 07604
201/288-3060

Caere Corp.
100 Cooper Ct.
Los Gatos, CA 95030
800/535-7226

The Complete PC
1983 Concourse Dr.
San Jose, CA 95131
800/229-1753

DFI Inc.
135 Main Ave.
Sacramento, CA 95838
916/568-1234

KYE Int'l Corp.
2605 E. Cedar St.
Ontario, CA 91761
800/456-7593

Logitech Inc.
6505 Kaiser Dr.
Fremont, CA 94555
800/231-7717
510/792-8901

Marstek Inc.
17795 Skypark Cir., Ste. F
Irvine, CA 92714
800/366-4620

Migraph
200 S. 333 St. #220
Federal Way, WA 98003
800/223-3729

Mouse Systems Corp.
47505 Seabridge Dr.
Fremont, CA 94538
510/656-1117

NCL America
1753 S. Main St.
Milpitas, CA 95035
800/521-0121

New Dest Corp.
1015 E. Brokaw Rd.
San Jose, CA 95131
408/436-2700

Nisca Inc.
1919 Old Denton Rd. #104
Carrollton, TX 75006
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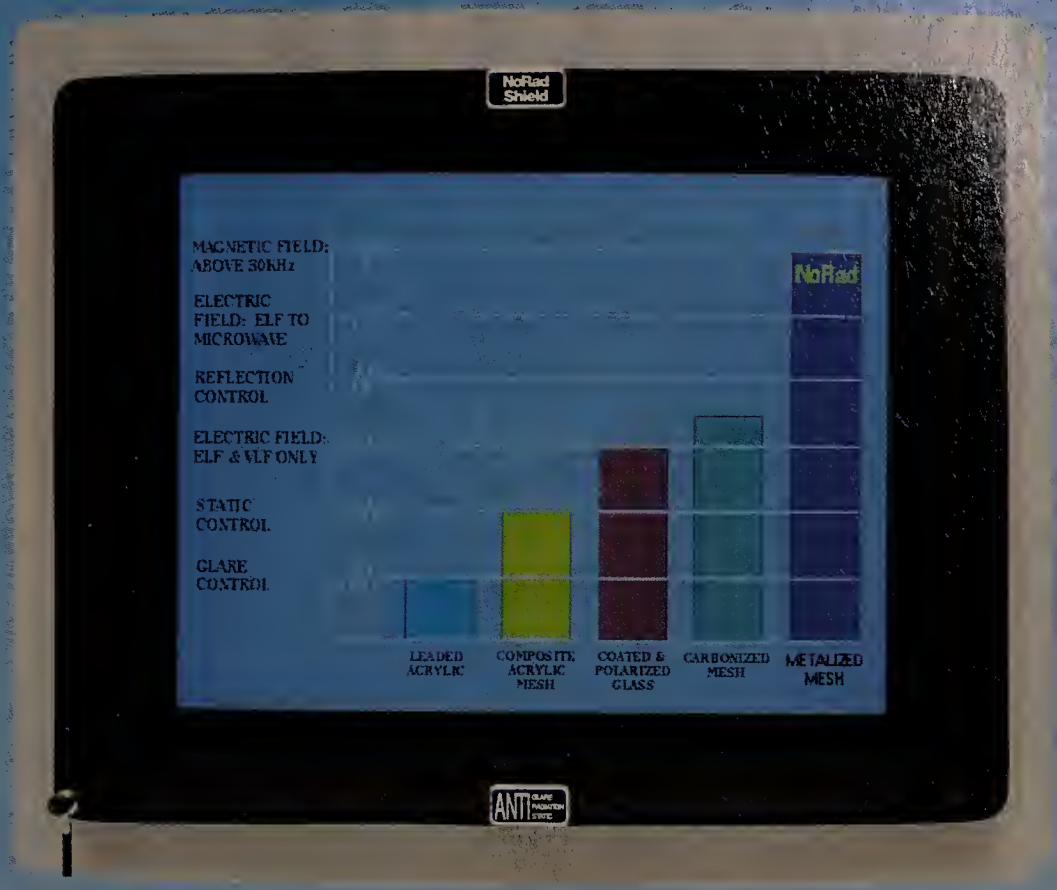

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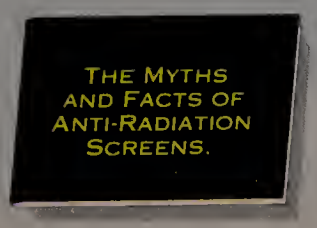

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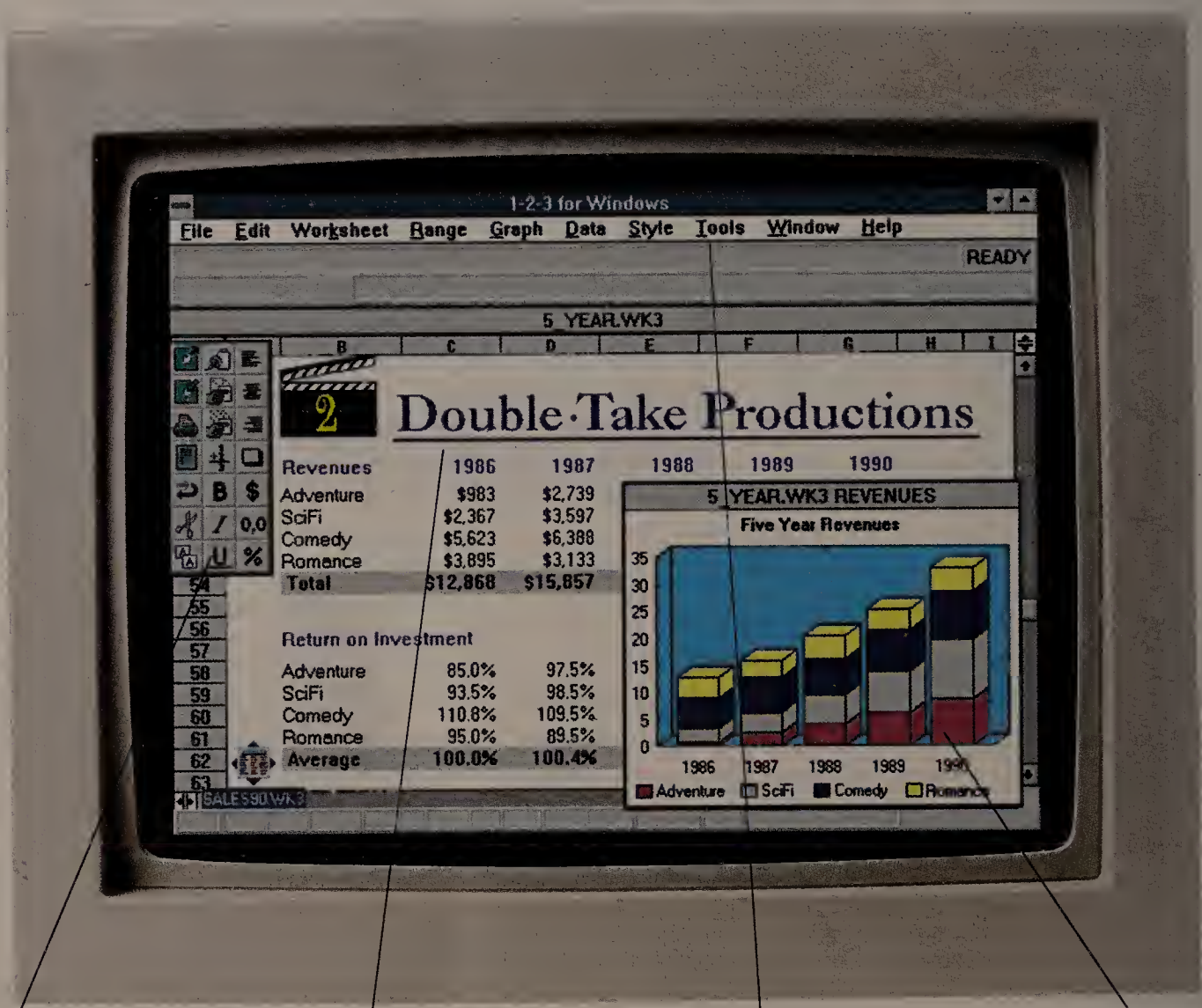

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ATM

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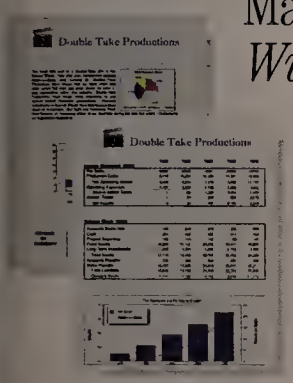

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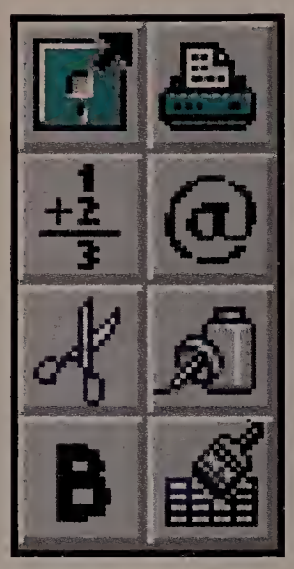

Customizable SmartIcons give you push-button access to basic and advanced spreadsheet functionality. Over 50 standard icons come with the program, or create new icons to suit your needs. For example, sum a column or a row, or change text to bold—all in a simple step.

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1-2-3 for Windows

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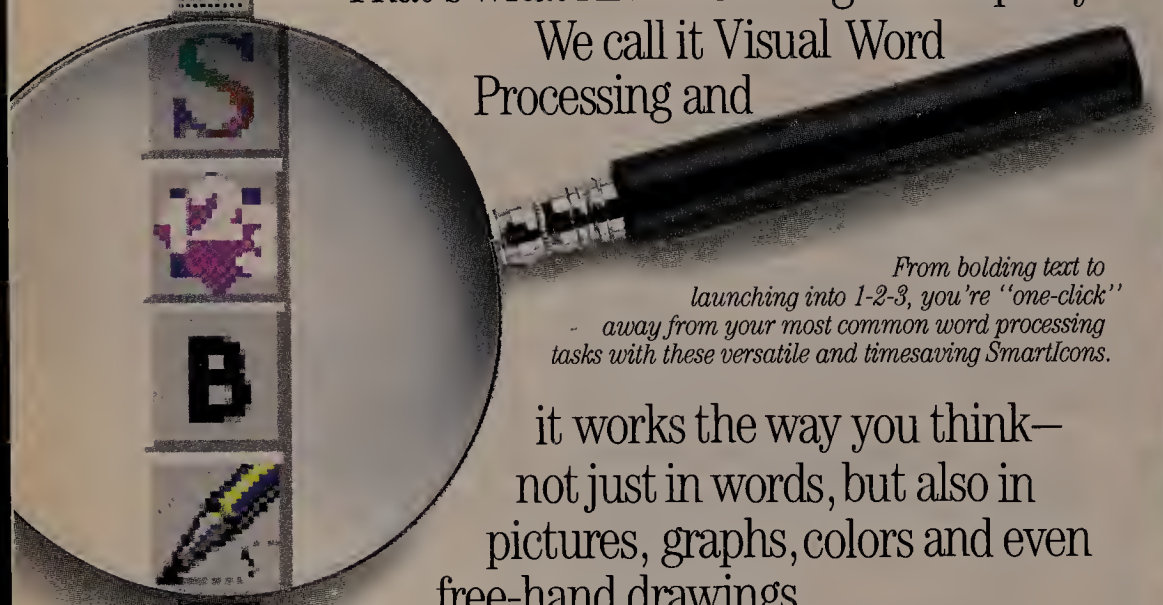

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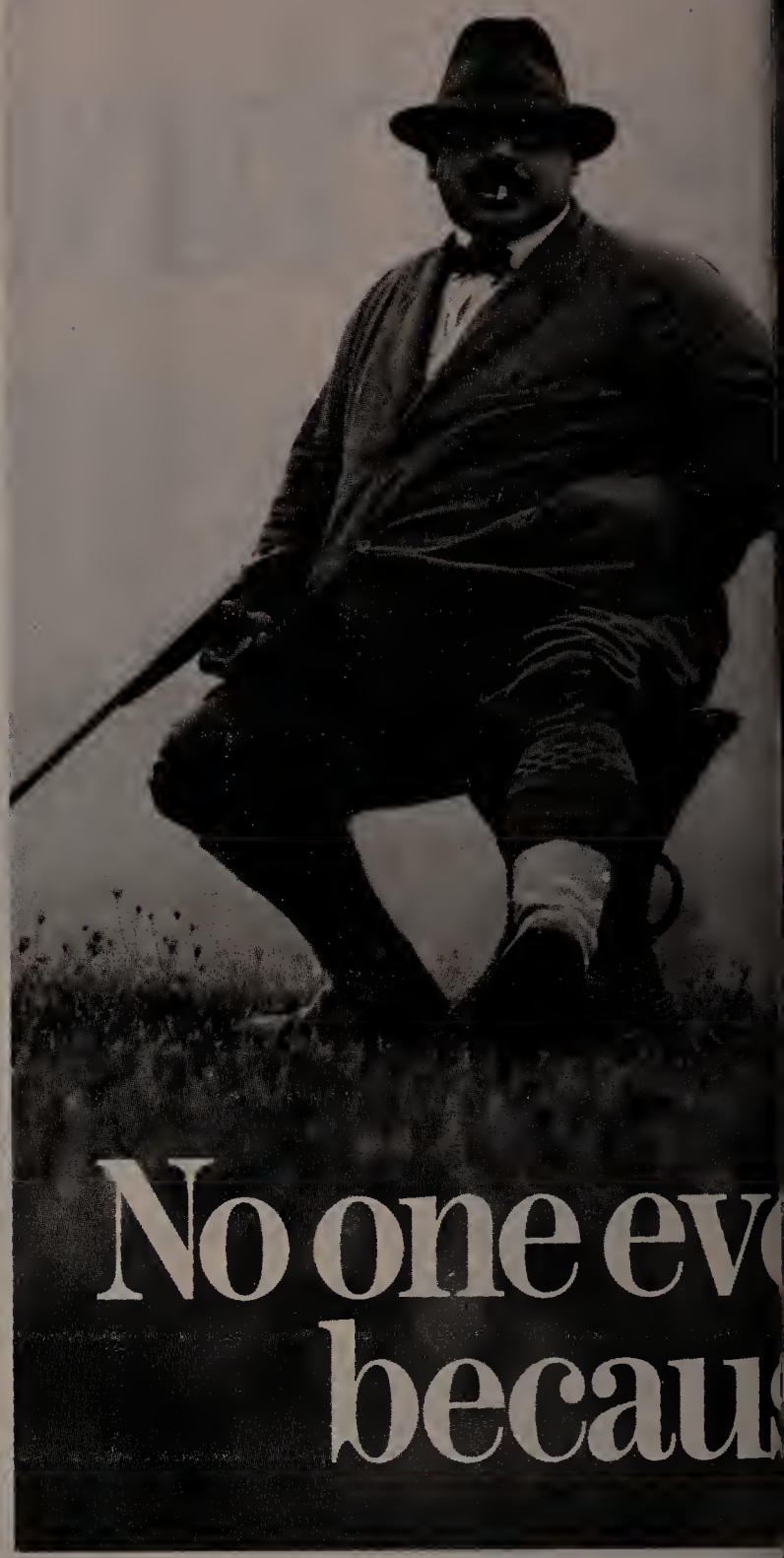

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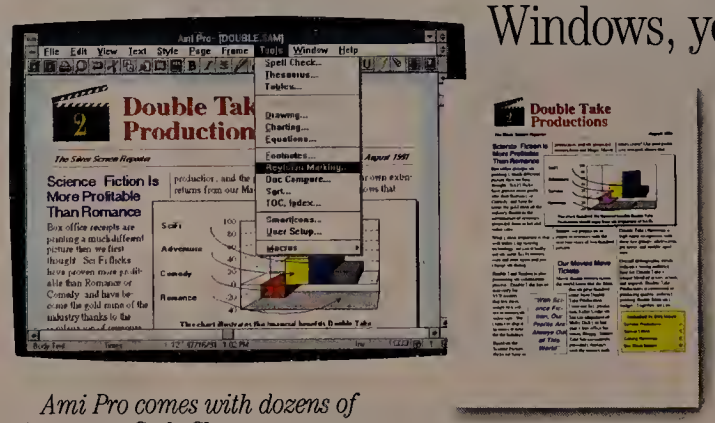

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Presentation Graphics

PC World road testers report that charting flexibility and organizational tools are the key features in a top-notch business graphics program.

Alice LaPlante

Spicing up dull reports and lackluster presentations is the mission of the eight users we talked to this month. Their secret? The latest versions of four top business graphics packages: Lotus's *Freelance Plus,* Software Publishing's *Harvard Graphics,* and two *Windows* applications—Microsoft's *PowerPoint for Windows* and Micrografx's *Charisma.*

Because presentation graphics are central to their jobs, our road testers want it all when it comes to features—and they're willing to shop around to get it. Five of them tried out many of the major packages before settling on a favorite; three who use *Windows* employ the best features of two programs.

We asked the road testers to talk frankly about what helps and what hinders them in using their program of choice, and to grade the products on six evaluation criteria. The features they value most highly are organizational tools, such as an outliner for planning presentations; a good selection of attractive graphs; and a simple, well-organized interface that saves time.

Given these expert insights, you can judge which graphics programs best suit your working style—you may even decide that using a combination of products is the most effective way to get what you need.

CHARISMA 2.0

Bob Gaines

Bob uses Charisma *with Aldus's* Persuasion *to create client business plans and internal presentations for his computer training firm.*

Charisma is the most powerful charting package on the market for the *Windows* environment. *PowerPoint* is a good package, but it doesn't give you all of *Charisma*'s terrific drawing and charting capabilities.

I do a lot of organizational charts, however, and I wish that type of chart weren't so structured and stringent. Sometimes I have to do hand drawing in Micrografx's *Designer* to get what I want. As far as clip art goes, *Charisma* gives you more options than any other package. Still, I use *Charisma* with *Persuasion* because of *Persuasion*'s outliner, which makes it easier to plan and implement an overall presentation.

One inconvenience with *Charisma* is that, although you can bring over data from a spreadsheet program such as *Excel,* you can't bring over the formulas. Also, I wish that *Charisma* had a spelling checker, because I create a large number of text charts.

Ed Lenfestey

Ed is manager of purchasing for an international commercial airline. He works on a 25-MHz 386 with 8MB RAM and a 160MB hard drive. Ed has used Charisma *for three years to create charts and graphics for executive briefings and to produce position papers on purchasing.*

I've used most of the major packages, and I've been tremendously happy with *Charisma.* I was critical of the early versions because the program was so slow, but the speed has improved in the latest release. *Charisma* still takes a lot of memory and hard disk space, but not as much as before.

Charisma's strength is that it's business oriented yet gives you the drawing

MARK WILLIAMS

Name: Bob Gaines
Position: Vice president
Company: Amris Training Systems and Solutions, Fort Worth, Texas
Hardware: 20-MHz 386, 4MB RAM, 120MB hard drive

MARK WILLIAMS

Name: Henry Draughon
Position: President
Company: HW Draughon & Associates, Dallas, Texas
Hardware: 25-MHz 386, 8MB RAM, 120MB hard drive

SCOTT SHAW

Name: Bob Martin
Position: Manager of executive support systems
Company: Eaton Corporation, Cleveland
Hardware: 20-MHz 386, 6MB RAM, 100MB hard drive

capabilities of *Designer.* I love the WYSIWYG capabilities, and we'd be lost without the program's excellent clip art. I'd like more tools for manipulating the clip art, though.

I'd also like *Charisma* to be more intuitive. For example, making a bullet chart requires a lot of little intricacies in placing bullets and making the graph that are simply not straightforward. I wish *Charisma* made it easier to plan a presentation: Rather than having to go back and change the color and style of individual components, I'd like to be able to work with an outliner that has master controls of all the components in a presentation. The printer drivers could be improved, too. Sometimes we'll get what we want on screen, but then we can't produce output. The technical competence of the people at Micrografx is fantastic, and the support is excellent.

FREELANCE PLUS 4.0

Henry Draughon

Henry uses Freelance Plus *to help his consulting firm's clients graph data for financial and management reports.*

I use a number of graphics packages in my work—whatever my clients use—but I prefer *Freelance Plus* because it can import *1-2-3* data, and it enables me to see the spreadsheet on the screen as I create a chart.

The Autocharts function is probably the most important feature for what we do. If you've created 50 charts from a particular spreadsheet and the data in that spreadsheet changes, then the charts linked to that spreadsheet change too. *Freelance Plus* can update 100 charts at the same time.

I wish *Freelance Plus* had a macro capability so I could create my own menus, make the screen look the way I want, and create hot buttons.

Bob Martin

Bob uses Freelance Plus *to create presentations about systems planning and management training.*

One big advantage of *Freelance Plus* is that we know it will continue to work well with *1-2-3*, in which our company is heavily invested.

I'm beginning to appreciate the outliner, Symantec's *GrandView*, that's been included in the most recent release of *Freelance Plus.* When you're under pressure before a presentation, it's nice to have a tool that helps you think about overall content. No matter how well you plan, creating graphics always seems to come at the tail end of making a report, so any time wasted feels like a long time. I'd like to be able to turn off the redraw feature on occasion. I'll often move back and forth between page 1 and page 2, using page 2 as a scratch pad, and the screen takes too long to refresh.

HARVARD GRAPHICS 3.0

Richard Johnson

Richard works in an Air Force technical evaluation center. He uses a 20-MHz 386 with 24MB of RAM and a 300MB hard drive. Richard has been using Harvard Graphics *for more than five years for such tasks as illustrating Air Force reports on new products and technologies.*

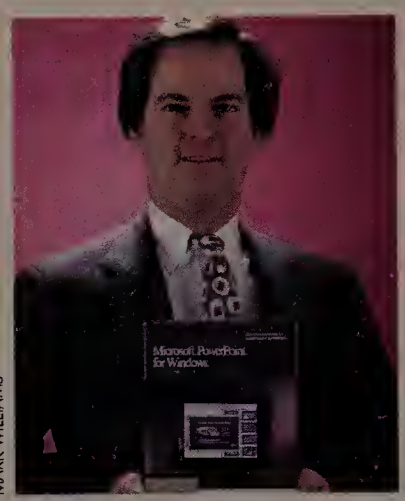
Harvard Graphics is my number one choice for a graphics package because you can be productive in a short time without having to crack the books. But frankly, I expected a little more out of Software Publishing than this version that's only half of what the program will be under *Windows. Windows 3.0* has been out for over a year, and we still don't have a *Windows* version.

Still, there's no doubt this version is much improved. I like the gallery, although the program could support more kinds of charts and give you a little more flexibility with the charts you have. I wish the program had an option for stacked and filled area charts.

Clip art is definitely not the product's forte. We import clip art from *Arts & Letters.* But *Harvard* is easy to use—one of its main strengths.

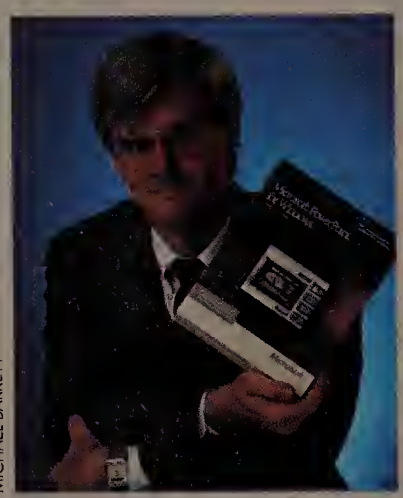
HARRY BRETT

Name: Laurel Winwright
Position: Consultant
Company: The New England, Boston
Hardware: 20-MHz 386, 4MB RAM, 120MB hard drive



MARK WILLIAMS

Name: Robert MacKay
Position: Finance supervisor
Company: E-Systems, The Garland Division, Dallas, Texas
Hardware: 33-MHz 486, 8MB RAM, 320MB hard drive



MICHAEL BARRETT

Name: Bill Warden
Position: Vice president
Company: Weber Management, Huntington, New York
Hardware: 16-MHz 386, 10MB RAM, 140MB hard drive

Laurel Winwright

Laurel employs Harvard Graphics *to illustrate technical manuals used by her company's insurance agents.*

Harvard Graphics' latest version is much more flexible. I just did an organizational chart I never would have tried before; now you can easily redraw this kind of chart, size it, and move it around. I don't like that the program redraws whenever you revise, which can take a long time. An option to turn off the redraw feature would be helpful.

A huge improvement is that when you are importing data from a spreadsheet, you can view the spreadsheet within *Harvard Graphics* rather than having to remember the column headings. AutoBuild is also a terrific time-saver; it lets you create a single chart and show components of it in different slides, so you don't have to create a separate chart for each slide.

The new version lets you print PCX files—handy if you use them for slide shows. Also, you can continue working on charts while printing, which you couldn't do before. Generally, printing was slow until I figured out how to get the software to recognize the additional memory I'd installed in both my PC and the printer. Of course, if I did only slower draft-quality printing, I might not need that extra memory.

If you've used previous versions of *Harvard Graphics*, it can be difficult to get used to this new icon-based version. In many ways, it's like learning a brand-new program. The $125 upgrade is expensive, but I feel it's worth it.

REPORT CARD

	Charisma 2.0		Freelance Plus 4.0	
	Bob Gaines	Ed Lenfestey	Henry Draughon	Bob Martin
Ease of use	A	B	B	B-
Planning/organization	B-	D	*	B
Charting	B+	B+	A-	B+
Enhancement tools	A	B	B	A
Output	A	B	A-	A
Service & support	A	A	A-	A
Overall	A-	B	B+	A-

	Harvard Graphics 3.0		PowerPoint for Windows 1.0	
	Richard Johnson	Laurel Winwright	Robert MacKay	Bill Warden
Ease of use	B	B	A	A
Planning/organization	B	A-	B	B+
Charting	C	A-	D	B-
Enhancement tools	C-	A-	C	B-
Output	C	B+	B	A
Service & support	A-	A	B	B
Overall	B-	A-	B	A-

*User did not use feature or test it fully.

POWERPOINT FOR WINDOWS 1.0

Robert MacKay

Robert uses PowerPoint for Windows *together with* Charisma *to create accounting presentations.*

PowerPoint is a good product, but I can't use it without *Charisma*, and vice versa. *Charisma* is best when I want to generate detailed flowcharts and fancy graphs; *PowerPoint*'s weakness is charting. I use *PowerPoint* to put the text together; copy in the *Charisma* graphs; and take advantage of its Master Slides feature.

PowerPoint's biggest strength is its ease of use. I really like the Notes feature for slide shows: You can put notes on a page along with a small rendition of each slide, which really helps when you give a presentation.

Bill Warden

Bill uses PowerPoint for Windows *to create presentations in his management consulting practice.*

I've been very happy using *PowerPoint* for the last year, although after I'd done a couple of presentations, I went out and bought *Excel* for the graphs. But this didn't bother me once I realized that *PowerPoint* wasn't meant to be a sophisticated charting package. For creating presentations, it's good.

I like that *PowerPoint* lets me work directly on a presentation rather than having to take the fill-in-the-blank approach of other graphics packages. I'll just start with an idea and build from there, which speeds up the process. I also like being able to make every aspect of a presentation consistent while I'm creating it.

The program's ease of use is great. I'd been using *PowerPoint* for three months before I opened the manual. In my opinion, having to read the instructions for a piece of software should be against the rules.

Alice LaPlante is a freelance writer in Palo Alto, California.

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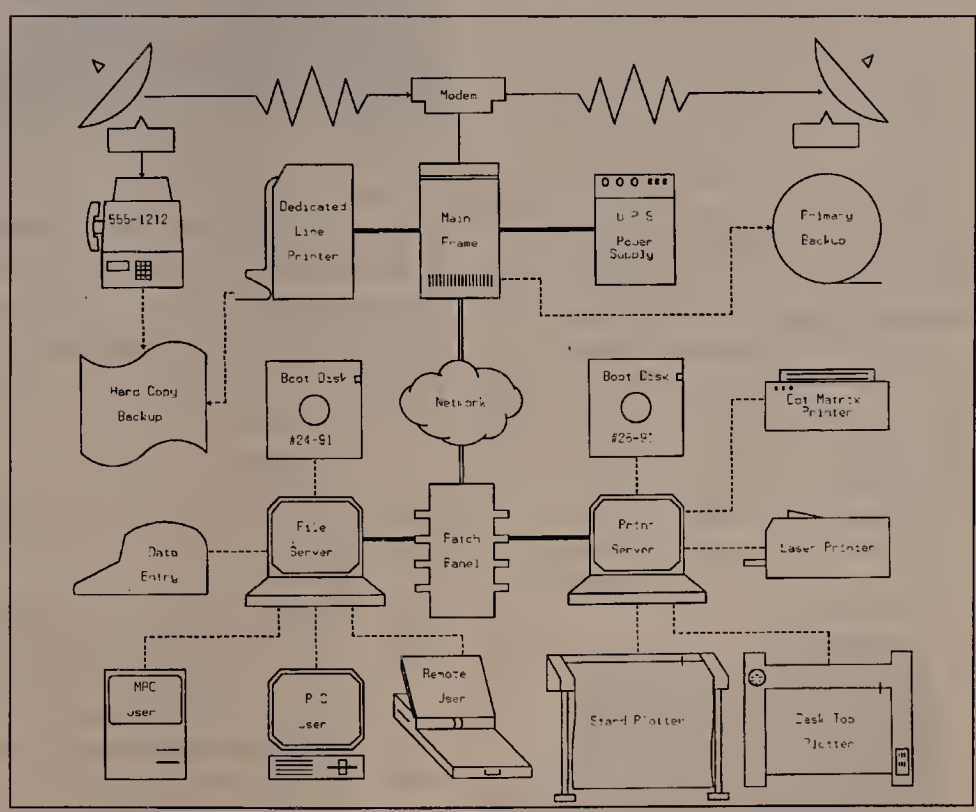

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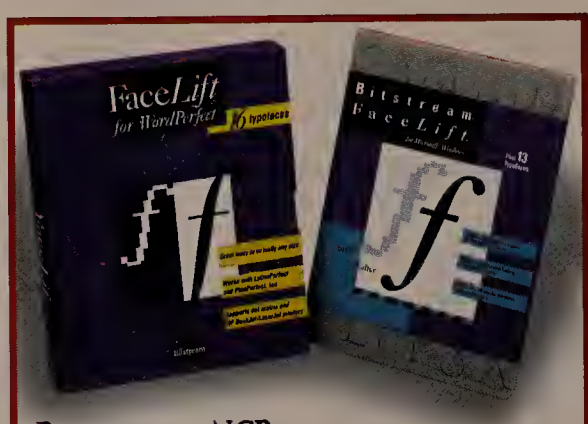

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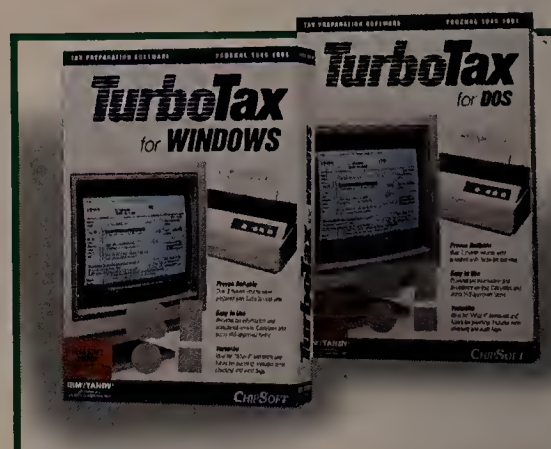

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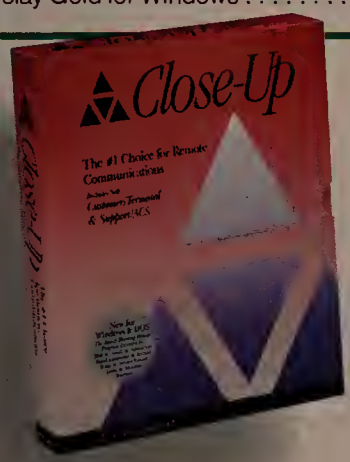

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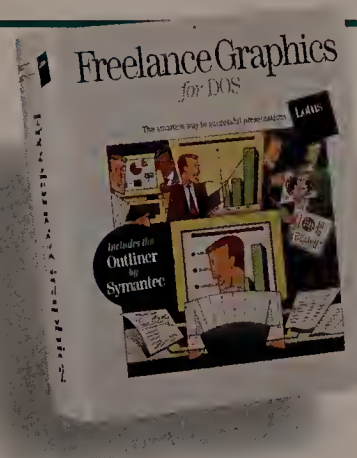

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PC Globe ... NCP
5902 ◉ PC Globe 4.0 ..... 45.
5945 ◉ PC USA 2.0 ..... 45.

Personics ... NCP
9288 Laptop Ultravision 2.1 *(3½" only)* ..... 49.
4384 ◉ Ultravision 2.0 ..... 79.

PowerUp ... NCP
7860 ◉ Calendar Creator Plus 4.0 ..... 52.
7857 ◉ Labels Unlimited 3.0 ..... 59.
7858 ◉ Express Publisher 2.0 ..... 89.
9332 ◉ Form Publisher for Windows w/Fill & File 109.

Qualitas ... NCP
7539 ☐ 386MAX 5.12 *(w/ASQ)* ..... 75.
7967 BlueMAX 5.12 for PS/2 *(3½" only) (w/ASQ)* 85.

1-800/243-8088

MEMBER MMC of the Direct Marketing Association, Inc.

PC Connection 900W
6 Mill Street
Marlow, NH 03456
SALES 603/446-7721 **FAX** 603/446-7791

Lotus ... NCP
5799 ◉ *Ami Pro 2.0*–Powerful & visual word processing for Windows made easy! Includes customizable SmartIcons for one click access to often used features, outlining, tables, drawing, a full macro language, & much more **$309.**

Quarterdeck ... NCP
3221 ☐ Expanded Memory Mgr. 386 6.0 ..... 65.
3220 ☐ DESQView 2.3 ..... 85.
4586 ☐ DESQView 386 2.3 ..... 145.

QUE Software ... NCP
4155 ◉ RightWriter 4.0 ..... 54.
1857 ◉ RightWriter 4.0 Network ..... 169.

Reality Technologies ... NCP
7891 ◉ WealthStarter 1.0 ..... 39.
6572 ◉ WealthBuilder 1.1 ..... 99.

Reference Software ... NCP
4396 ◉ Grammatik IV 2.0 ..... 59.
7483 ◉ Grammatik for Windows 2.0 ..... 59.

Roykore ... NCP
2473 ◉ Instant ORG Charting! 1.0 ..... 125.
8162 ◉ ABC Flowcharter 1.1 ..... 189.

Sitka ... NCP
6675 ☐ TOPS Network Bundle 3.0 ..... 159.
3720 Flashcard 2.1 *(AppleTalk network card)* . 155.

Softlogic Solutions ... NCP
3542 ☐ Software Carousel 5.0 ..... 55.

Software Publishing ... NCP
3496 ☐ Professional Write 2.2 ..... 169.
9638 ☐ Professional Write Plus 1.0 ..... 169.
3482 ☐ Harvard Graphics 3.0 ..... 419.
6600 ◉ Superbase 4 for Windows 1.3 ..... 529.

Software Toolworks ... NCP
9859 ◉ Word for Word/Windows 4.2 ..... 47.

Solution Systems ... NCP
7977 ☐ Brief 3.1 *(Programmer's Editor)* ..... 189.

Spinnaker ... NCP
1415 ◉ PFS: WindowWorks 1.0 ..... 129.
7604 ◉ PLUS for Windows 2.0 ..... 289.

Stac Electronics ... NCP
1409 ◉ Stacker 1.1 ..... 89.
1408 ◉ Stacker 1.1 w/8-bit coprocessor card . 159.

Symantec ... NCP
6397 ☐ The Norton Backup 1.2 *(Windows/DOS)* 89.
3146 ◉ The Norton Utilities 6.0 ..... 119.
3425 ☐ Q&A 4.0 ..... 269.
7999 ◉ Norton Anti-Virus 1.0 ..... 89.
2359 ☐ The Norton Desktop for Windows .... 105.
8378 ☐ PC Anywhere IV 4.03 ..... 125.

Systems Compatibility ... NCP
9046 ☐ Complete Writer's Toolkit 1.1 ..... 85.
6564 ☐ Software Bridge 5.0 ..... 79.

Teleware ... NCP
9847 ◉ M.Y.O.B. for Windows ..... 139.

TIMESLIPS ... NCP
2987 ☐ Timeslips III 4.0 ..... 195.
1270 ☐ TimeSheet Pro 2.0 ..... 145.

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Atech Software ... NCP
9436 ☐ *Publisher's Powerpak 1.2 for Windows*—True WYSIWYG for Windows applications. Awarded *PC World*'s Best Buy (1991), Powerpak enhances print quality on over 400 printers. Receive 84 add-on typefaces free with purchase .... $49.

Timeworks ... NCP
6253 ⊡Publish-It! 2.0 ..... 159.

T/Maker ... NCP
1051 ☐Color Graphics Presentation 1.0 ..... 95.

Touchstone Software ... NCP
7420 ⊡Check It 3.0 ..... 89.

Traveling Software ... NCP
5179 ⊡LapLink III 3.0 ..... 95.

Ventura ... NCP
7796 ⊡Publisher V 4.0 for Windows ..... 569.

WordPerfect Corporation ... NCP
7781 ⊡LetterPerfect 1.0 ..... 129.
4214 ⊡WordPerfect Office PC ..... 89.
3804 ☐WordPerfect 5.1 ..... 265.
6685 ⊡DrawPerfect 1.1 ..... 279.

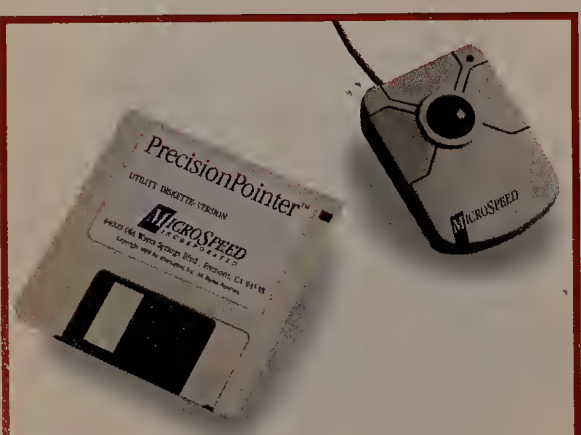
WordStar International ... NCP
1482 ⊡Correct Grammar 1.0 for Windows .... 65.
6791 ☐WordStar Professional 6.0 ..... 199.

XTREE ... NCP
1202 ⊡XTree Easy 1.0 ..... 45.
6161 ⊡XTree Gold 2.5 ..... 95.

Z-Soft ... NCP
1626 ⊡Publisher's Paintbrush for Windows .. 299.

RECREATIONAL/EDUCATIONAL

Broderbund ... CP
8068 ⊡Where in World is Carmen Deluxe ..... 52.
1836 ⊡Where in America's Past is Carmen Sandiego ..... 39.
5851 ⊡SimCity ..... 33.
8886 ⊡SimEarth ..... 45.



MicroSpeed ... 1 year
2763 *MicroTRAC*—Delivers top speed & precision with a footprint just ¾ the size of a business card. Features 3 wraparound buttons with "drag-lock" & adjustable resolution. Incl. serial & PS/2 interface for desktop or laptop .. $59.

Electronic Arts ... NCP
4534 ⊡Mavis Beacon Teaches Typing 2.0 *(CP)* $35.
3031 ⊡Mavis Beacon for Windows ..... 45.
3023 ⊡ChessMaster 3000 ..... 35.
1334 ☐Chuck Yeager Air Combat Trainer ..... 42.
3037 ☐Secret Weapons of the Luftwaffe ..... 49.
7372 ⊡World Atlas 2.0 ..... 42.
3050 ☐World Atlas for Windows ..... 57.

Harvard Associates ... NCP
2324 ⊡PC Logo 3.0 ..... 59.

HyperGlot Software ... NCP
(French, German, Italian, Spanish available.)
☐Word Torture for Windows ..... ea. 34.
☐Word Torture 3.0 ..... ea. 29.

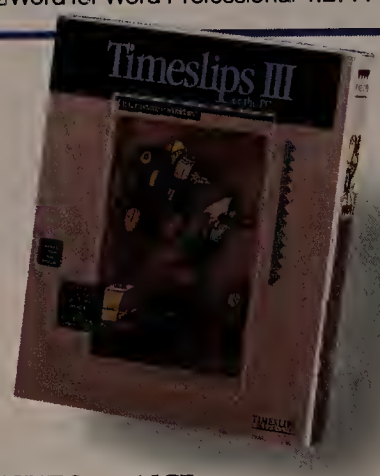
Microsoft ... NCP
7881 ☐Entertainment Pack for Windows 1.0 .. 29.
2858 ☐Flight Simulator 4.0 ..... 39.
8270 ⊡Aircraft and Scenery Designer 1.0 .... 29.

Microsoft Press (Books)
8129 Running Windows *(2nd Edition)* ..... 22.
8136 Running Microsoft Excel ..... 22.

Penton Overseas ... NCP
⊡VocabuLearn/ce Levels I & II (French, Italian, German, Spanish, Russian, Hebrew and Japanese) ..... each 35.

Sierra ... CP
9466 ☐Space Quest IV *(VGA)* ..... 39.
7972 ☐King's Quest V *(VGA)* ..... 45.

Software Toolworks ... NCP
9859 ⊡Word for Word 4.2 for Windows ..... 47.
9860 ⊡Word for Word Professional 4.2 ..... 89.



TIMESLIPS ... NCP
2987 ☐ *Timeslips III 4.0*—Know exactly who owes you what with this time and expense billing system. Perfect for service professionals (accountants, lawyers, etc.) who need to track and bill their time ..... $195.

Spectrum Holobyte ... NCP
3047 ⊡Wordtris ..... 27.
3457 ☐Falcon 3.0 ..... 45.

Stone & Associates ... NCP
3439 ⊡2nd Math 4.2 ..... 27.

Strategic Studies Group ... NCP
⊡Civil War *(vol. 1, 2, or 3)* ..... ea. 27.

Toyogo ... NCP
2702 ⊡Go Junior for Windows ..... 24.
2701 ⊡Go Master for Windows ..... 39.
2703 ⊡Nemesis Deluxe Toolkit 5.0 ..... 75.
2704 ⊡Nemesis Deluxe Toolkit 5.0 for Windows. 75.

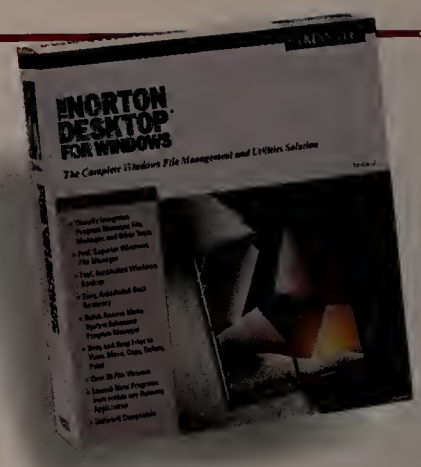
True BASIC, Inc. ... NCP
⊡Kemeny/Kurtz Math Series ..... each 45.

Walt Disney Computer Software ... CP
2629 ⊡Mickey's 123's ..... 35.
2624 ⊡Mickey's ABC's ..... 35.

HARDWARE

Warranties listed next to manufacturer.

American Power ... 2 years
7108 Smart UPS 400 ..... 339.
7105 Smart UPS 600 ..... 469.
6811 Back-UPS 360 ..... 219.
7106 Back-UPS 520 ..... 329.



Symantec ... NCP
2359 ☐ *The Norton Desktop 1.0 for Windows*—Complete Windows file management and utilities solution. Includes an enhanced file manager, the fastest and most automated Windows backup, and data recovery tools $105.

ATI Technologies ... 2 years
9821 VGA Basic-16 *(640 x 480, 16 colors)* ..... 85.
2706 VGA Wonder XL *(w/1 MB)* ..... 299.
9629 VGA Wonder XL *(256K upgradable to 1MB)* 199.
2382 Graphics Vantage VGA *(w/1 MB)* ..... 429.
9822 Graphics Ultra *(w/1 MB)* ..... 559.
1838 Graphics Ultra w/VGA *(512K)* ..... 479.
2012 Graphics Ultra w/VGA *(w/1 MB)* ..... 619.
1825 2400etc/i Modem *(w/9600 SendFax)* ... 139.
9620 9600etc/e Modem ..... 379.

Boca Research ... 5 years
7001 BOCARAM/AT PLUS *(0K)* ..... 119.
7150 BOCARAM/AT PLUS *(2 MB)* ..... 219.
7139 *(4 MB)* .... 329. 7138 *(8 MB)* .... 539.
6998 I/O Board for AT ..... 59.
6999 I/O Board for Microchannel *(S/S/P)* ..... 109.
8380 BasicVGA *(256K, 640 x 480)* ..... 63.
8381 SuperVGA *(1 MB, 1024 x 768)* ..... 145.

Bravo Communications ... 2 years
7400 2 Position Laser Compatible Switch Box. 109.

Brown-Wagh ... 1 year
8578 Creative Labs Sound Blaster ..... 115.
2336 Creative Labs Sound Blaster Pro ..... 199.

Caere ... 1 year
8158 Typist Plus Graphics ..... 389.

Canon ... 1 year
We are an authorized Canon Service Center.
7894 BJ-10ex Printer *(4.6 lb.)* ..... 349.
7897 BubbleJet Ink Cartridge *(BJ-10ex)* ..... 23.
7896 BJ-10ex Sheet Feeder ..... 75.

Cardinal ... 1 year
2720 MB2450 Internal 2400 Baud Modem .... 69.
2719 MB2296SR Internal Send/Receive Fax .. 109.
2721 VGA732 True Color Ultra VGA Card .... 169.

CH Products ... 1 year
7801 FlightStick w/Falcon ..... 49.

CoStar ... 1 year
1418 AddressWriter Envelope Printer ..... 499.

Curtis ... lifetime
1708 Ruby-Plus SPF-2+ ..... 65.
7358 Command Center SPF-4 ..... 89.
Glass Filter Plus *(specify size)* ..... each 65.

Cyrix Corporation ... 5 years
MATH COPROCESSORS
9875 FasMath 83D87-25 ..... 185.
9876 FasMath 83D87-33 ..... 195.
9877 FasMath 83S87-16 *(SX compatible)* .... 115.
9914 FasMath 83S87-20 *(SX compatible)* .... 125.

Datadesk ... 3 years
6901 Switchboard *(modular keyboard)* ..... 159.

Epson ... 2 years
We are an authorized Epson Service Center.
1906 FX-850 *(80 col., 264 cps, 9 pin)* ..... 309.
1904 FX-1050 *(136 col., 264 cps, 9 pin)* ..... 439.
2358 LQ-570 *(80 col., 252 cps)* ..... 289.
2361 LQ-870 *(80 col., 330 cps)* ..... 489.
2357 LQ-1170 *(136 col., 330 cps)* ..... 669.
5184 LX-810 *(80 col., 180 cps, 9 pin)* ..... 185.

PC Cornucopia.

Oh my gourd!
What will they think of next?

It's time to preserve, pickle, and pack it in for the season up here in the glorified pumpkin patch of Marlow, NH (pop. 567). But even though there's a definite nip in the air, and we're tucking ourselves in tighter each night, we continue offering the freshest crop of PC products you'll find anywhere—not to mention service that's way more personal than any computer will ever be.

Our illustrious party animals have been adding a human touch to high tech for almost ten years now. But for newcomers it may be a little hard to see the Connection, so to speak. Well, it's simple—while we do have the best combination of low prices, technical support, and fast shipping around, we're still just a bunch of country folk doing an honest day's (and often night's) work here in the woods of New Hampshire. Call anytime—whether you want the latest video display or a report on this year's apple crop.

A kernel of truth. (Or, let's not get too corny.)

Things will really start hopping around your office when you get your supply of PC Connection Popcorn on the Cob. We're sending some free to everyone who places an order for $750 or more between now and December 31. Just put a cob in the bag, place it in your microwave, and out come three cups of popcorn. What an earful!

Lend you an ear? We'll give you 3 of them! PC Connection Popcorn on the Cob. One batch per customer. Not available outside continental U.S.

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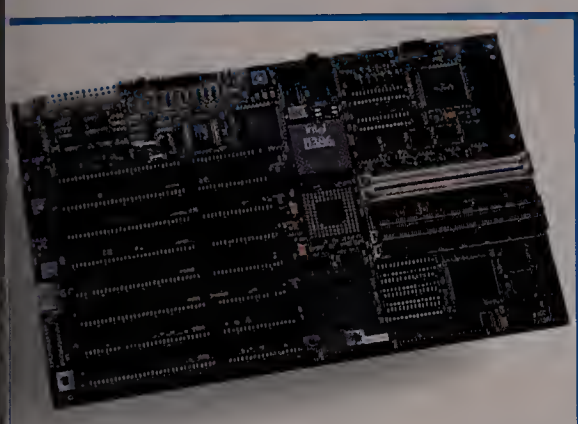
what you need



Hauppauge Computer Works ... 1 year
9034 *33 MHz 386N Motherboard for AT*–Need 386 power, performance, and compatibility? Easily upgrade your PC, XT, AT or true compatible with the NEW Hauppauge Motherboard. 30 day Money Back Guarantee ..... $979.

Everex ... 1 year
1133 Tempo LX Notebook *(5 MB, 40 MB HD)* 2349.
1683 Tempo LX Notebook *(5 MB, 60 MB HD)* 2899.

Hauppauge Computer ... 1 year
9031 20 MHz 386 Motherboard for PC ..... 799.
9870 25 MHz 386N Motherboard for AT ..... 899.
9034 33 MHz 386N Motherboard for AT ..... 979.

Hayes ... 2 years
2307 Smartmodem 2400 ..... 349.
7391 Ultra 96 Modem ..... 669.
9884 Pocket Edition 2400 ..... 129.

Hewlett-Packard ... 1 year
9993 LaserJet IIIP *(with toner)* ..... 1149.
6754 LaserJet III *(with toner)* ..... 1679.
1959 LaserJet Fax ..... 1399.

Hitachi ... 2 years
9492 14MVX/LMF 14" SVGA Monitor *(1024 x 768) (with low radiation screen)* ..... 489.

Intel ... 5 years
6421 2400B MNP Internal Modem ..... 199.
5119 2400 Baud External Modem ..... 179.
6420 2400EX MNP Modem ..... 229.
7880 9600EX Modem ..... 529.
2346 Inboard 386/PC with 1 MB ..... 495.
5336 Above Board Plus 8 2 MB ..... 449.
5342 Above Board Plus 8 I/O 2 MB ..... 479.
7782 SatisFAXtion *(fax board)* ..... 399.
8778 SatisFAXtion for Microchannel ..... 449.
8901 Matched Memory 2 MB *(PS/2)* ..... 139.
8903 Matched Memory 4 MB *(PS/2)* ..... 299.
Matched Memory *(for LaserJet IIP, III, IIIP IIID)*
1810 1 MB ..... 99. 1787 2 MB ..... 159.
1637 Snap-In 386 ..... 389.
3358 Power Pak *(Snap-In 386 & Above Board Microchannel 4 MB)* ..... 925.
MATH COPROCESSORS
7385 80287XL *(16 MHz 80286 CPU's)* ..... 89.
4750 80387SX *(16 MHz 80386SX CPU's)* ..... 129.
2372 80387-20 *(20 MHz 80386 CPU's)* ..... 219.
4121 80387-25 *(25 MHz 80386 CPU's)* ..... 219.

Kensington Microware ... 1 year
2582 Master Piece Plus ..... 99.
7899 Expert Mouse *serial* . 119. 7900 *bus* . 129.
3312 LaserStand ..... 125.
3311 MasterStand ..... 59.

Key tronic ... 3 years
4518 101 Plus Keyboard ..... 99.

Kraft ... 5 years
5801 Game Card *(2 ports)* ..... 29.
5800 3 button Thunder Joystick ..... 29.
7862 TopTrak *(Laptop Trackball)* ..... 55.

Logitech ... limited lifetime
6029 Trackman *serial* ... $75. 6028 *bus* ... $79.
2343 Trackman Portable ..... 105.
1484 ScanMan 32 ..... 169.
7975 ScanMan 256 ..... 289.
3295 MouseMan *(combo)* 75. 9766 *(cordless)* 139.

Megahertz ... 5 years
1193 T324D 2400 Modem *(for Toshiba Laptops)* 129.
1196 T224 2400 Modem *(for Toshiba Laptops)* 129.
1187 T324FM 96/24 Fax Modem *(Toshiba Lptps.)* 299.
1199 T52CC - 2 MB Upgrade for Toshiba T1000 series or T2000SX ..... 239.

Micron Technology ... 2 years
7595 2 MB Expansion for HP LaserJet IIP or III 119.
7012 Memory Upgrade PS/2 70 - 2 MB ..... 139.

Microsoft ... lifetime
7597 Microsoft Mouse *(bus or serial)* ..... 89.
2897 Mouse with Paintbrush *(bus or serial)* ... 105.
2898 Mouse with Windows 3.0 *(bus or serial)* . 149.
1956 Mouse with Works *(bus or serial)* ..... 155.
1896 Ballpoint Mouse *(serial only)* ..... 119.

MicroSpeed ... 1 year
2763 MicroTRAC *(serial & PS/2 interface)* ..... 59.
PC-TRAC Trackball
6007 *serial* ..... 75. 6008 *bus* ..... 89.
7271 *Inport* ..... 79. 6330 *PS/2* ..... 79.

Intel ... 5 years
7782 *SatisFAXtion*–Send & receive faxes with the 9600 bps fax or communicate with the 2400 bps MNP modem. Fax from within most any application by way of the print command. Supports background operation & installs easily .. $399.

Mouse Systems ... lifetime
5997 Trackball *(1 yr. wrnty.) serial* .. 65. *bus* .. 69.
3213 PC Trackball II *(serial)* ..... 69.
7878 PC Mouse III *(serial)* .... 89. *(bus)* .... 95.

NEC ... 2 years
9441 CDR36 Portable CD-ROM Drive ..... 399.
4799 Multisync 2A *(VGA Monitor)* ..... 439.
5085 Multisync 3Ds Monitor ..... 619.

Orchid Technology ... 4 years
7863 ProDesigner VGA IIS *(with 1 MB, includes RAMDAC chip)* ..... 289.

PC Power & Cooling ... 1 year
REPLACEMENT POWER SUPPLIES
3203 Turbo Cool 200 ..... 149.
7915 Turbo Cool 300 ..... 165.
7053 InnerSource 2210 *(power backup)* ..... 349.

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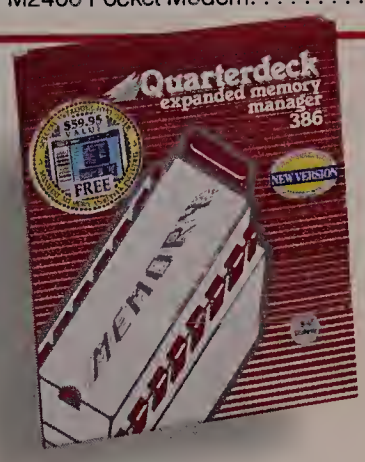
Pacific Data Products ... lifetime
9833 *PacificPage XL for HP LaserJet IIP/III/IID*–New! High-speed PostScript emulation cartridge & accelerator board. Includes Intel i960 processor & 2 Mb of memory for output up to 8 times faster than stand-alone cartridges ..... $799.

Pacific Data Products ... lifetime
2255 Font Bank Cartridges *(programmable font cartridge, for LJ II, IIP, III, IIIP)* ..... 225.
6779 25 Cartridges in One! *(for LJ II, IIP, III)* ... 275.
8975 Complete Font Library *(for LJIII)* ..... 275.
Memory upgrade for LaserJet IIP/III:
7055 *2 MB* ..... 149. 7759 *4 MB* ..... 259.
Memory upgrade for LaserJet II/IID:
6838 *2 MB* ..... 249. 6836 *4 MB* ..... 379.
Pacific si Memory:
2252 *1 MB* ..... 99. 2253 *4 MB* ..... 319.
7158 Pacific Page PE 4.0 *(for LJ IIP/III)* ..... 379.
6834 Pacific Page *(for LJ II)* w/2 MB Mem. Brd. 379.
9833 Pacific Page XL *(w/accelerator board)* .. 799.

Panasonic ... 2 years
1410 KXP 1123 *(240 cps, 80 col.)* ..... 249.
1419 KXP 1124i *(240 cps, 80 col.)* ..... 319.
8144 KXP 1624 *(192 cps, 132 col.)* ..... 399.

Practical Peripherals ... 5 years
3103 2400 Baud Internal Modem ..... 129.
3102 2400 Baud External Modem ..... 179.
8993 2400 Baud Internal Modem *(V.42 bis)* .. 169.
8994 2400 Baud External Modem *(V.42 bis)* .. 209.
4542 2400 Baud Internal Modem for PS/2 ... 229.
8132 PM2400 Pocket Modem ..... 109.



Quarterdeck ... NCP
3221 ☐ *Expanded Memory Manager 386 6.0*–Gain up to 200K or more of previously unusable memory. Incl. automatic memory conversion, full compatibility with Windows, & speed optimization of memory (w/Manifest) .. $65.

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Without any static.

2266	PM9600 Internal Modem	$399.
7934	PM9600SA Modem	469.
2264	PM2400FX96 *(modem/fax board)*	145.
	Targus ... lifetime	
1305	Universal Notebook *(for ntbk. computers)*	69.
	TheComplete PC ... 2 years	
8082	Half Page Scanner/400 w/ReadRight	289.
5828	TheComplete Communicator	319.
	Toshiba ... 1 year	
9893	T2000SX Notebook *(40 MB)*	2999.
3359	T2000SX Notebook *(60 MB)*	3299.
3360	T2000SXE Notebook *(40 MB)*	3399.
3361	T2000SXE Notebook *(60 MB)*	3649.
9894	T1200XE Laptop *(40 MB)*	2099.
1779	T3100SX Laptop *(80 MB)*	3199.
1773	T3200SX Laptop *(120 MB)*	3499.
1765	T3200SXC Laptop *(120 MB)*	5899.
	Tripp Lite ... 2 years	
6199	Isobar 4-6 *(4 outlets, Gold Seal Warranty)*	49.
6200	Isobar 6-6 *(6 outlets, Gold Seal Warranty)*	59.
6201	Isobar 8-12 *(8 outlets, Gold Seal Warranty)*	69.
6018	LC1200 *(1200W line conditioner)*	159.
1528	PS6.0 *(600VA on-line UPS)*	559.
	Video 7 ... 7 years	
4931	VRAM II VGA 512k	259.
	Zoom Telephonics ... 7 years	
1307	Int. 2400 Baud w/9600 Baud Fax Modem	109.
1178	Ext. 2400 Baud w/9600 Baud Fax Modem	119.
1170	2400 Baud w/4800 Baud sendfax	69.
1181	2400 Baud V.42bis Modem *(2 year)*	159.
1167	2400 Baud Internal Modem	69.
1166	2400 Baud External Modem	85.
3075	9600 V.32 Turbo Internal Modem *(2 yr.)*	399.

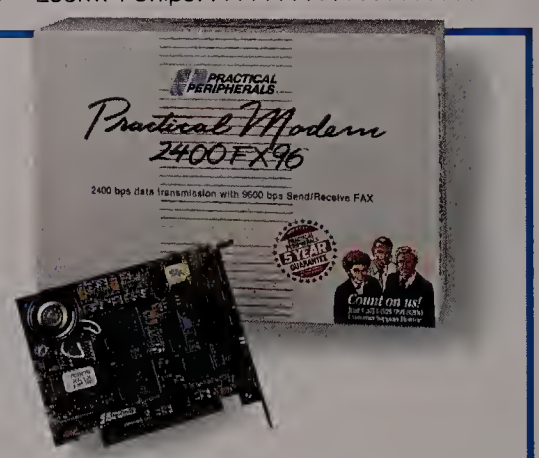
Canon ... 1 year
7894 *BJ-10ex Printer*–New enhanced version of the popular 4.6 lb. printer provides laser-like print quality (up to 360 dpi) on plain bond paper, envelopes or transparencies. Available in white or gray ..... $349.

DRIVES

	Conner Peripherals ... 1 year	
8875	CP3044 40 MB IDE HD *(25 ms)*	219.
2339	CP30104 120 MB IDE HD *(19 ms)*	399.
1337	CP3204 200 MB IDE HD *(16 ms)*	649.
	IOMEGA ... 1 year	
	We are an authorized Iomega Service Center.	
2224	Bernoulli II Transportable 90 MB	799.
2616	Internal 90 MB Bernoulli	799.
2500	PC2B Controller	199.
5113	44 MB Cartridge Tripak	269.
2530	90 MB Cartridge	149.
2467	90 MB Cartridge Tripak	439.
	Mountain Computer ... 2 years	
2917	40-60 MB Internal Tape Drive	259.
5190	DC2000 Pre-formatted Cartridges ... ea.	35.
6153	DC2120 Tape Cartridge *(5 pack)*	149.
	Pacific Rim ... 1 year	
1304	1.2 MB External *(for any parallel port)*	265.
6602	1.44 MB External *(for PC/XT/AT)*	239.
	Plus Development ... 2 years	
8304	Hardcard II XL 50 MB *(9 ms)*	399.
8287	Hardcard II XL 105 MB *(9 ms)*	599.
	Seagate ... 1 year	
4554	40 MB Internal HD ST251-1 *(28 ms)*	$249.
1321	ST157A 40 Mb IDE Hard Drive	229.
1320	ST1144A 130 Mb IDE Hard Drive	475.
	TEAC ... 1 year	
4670	1.44 MB Drive for PC/XT *(3½")*	69.
4326	1.44 MB Drive for AT *(3½", w/Basetech)*	89.
4951	720k Drive for PC/XT *(3½")*	69.
6951	1.2 MB Drive for AT *(5¼")*	75.

MEMORY

6556	256k DRAM *(100 ns, set of 9)*	call
5510	1 MB x 9 SIMMs *(80 nanosecond)*	call
2497	4 MB x 9 SIMMs *(80 nanosecond)*	call
5746	1 MB Chips *(80 ns, set of 9)*	call
7813	256k x 4 Chips	call



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POINTERS FOR PUBLIC SPEAKING

IT TAKES A LOT MORE THAN A PC AND A GRAPHICS PACKAGE TO MAKE A PRESENTATION SIZZLE. HERE'S WHAT YOU NEED TO KNOW BEFORE YOU FACE YOUR NEXT AUDIENCE.

BRONWYN FRYER

Therese Myers, CEO of Quarterdeck Office Systems, packed more than pretty slides when she visited prospective investors prior to her company's initial public offering in June 1991: She was armed with a hard-hitting pitch that resulted in dramatic profits. The demand for Quarterdeck shares far surpassed the 3.4 million offered. Less than a month after the company went public at $10 a share, the stock had soared to $17. "Terry's ability to give a great talk made all the difference," says John Siegler of Montgomery Securities, Quarterdeck's leading underwriter. "She's enthusiastic, she's sincere, and she's able to articulate her story very well."

In today's business world, effective presentation skills are a requirement of management. Executives are expected to give polished, coherent, and exciting presentations to attract prospects and investors, keep customers loyal, inform the press, and train employees. "People who can express a message effectively are put in the forefront of their companies," says speaking coach Jerry Weissman, head of Power Presentations in Santa Clara, California.

Outstanding speakers have learned from experience that there's more to a presentation than a pie chart. Here we've gathered ten commonsense presentation tips from the pros—guaranteed to help you get your message across to the toughest audience.

TIP 1

GET YOUR STORY STRAIGHT

The biggest pitfall for most presenters is a failure to give a focus to their material, says Weissman, who coaches high-tech heavies such as Myers and Microsoft CEO Bill Gates in the fine art of The Talk. Those who drown listeners in information "turn off the audience."

The most important ingredient of a good presentation is a coherent story, according to Paul Davoust, group product manager for Borland International's spreadsheet business unit. With Weissman's help, Davoust learned to focus on the message he wants to communicate, then select three or four key points that prove his argument. He whittles down an outline, cutting away extraneous details, then emphasizes ideas that strengthen the overall story. By keeping his argument straightforward, Davoust says, "I'm able to hold the attention of the audience and get my message across."

TIP 2

SEE YOURSELF AS OTHERS SEE YOU

An initial videotape session with Weissman was "worse than shock therapy," recalls Bernie Vonderschmitt, president of semiconductor company Xilinx. "You find out how incredibly stupid you look and sound."

But rather than hold open season on a client's mannerisms, speech coaches use the camera to encourage clients in the things they do right. "When we viewed the tape," recalls Davoust, "we made a list of some good speaking habits I already had, like looking at individuals in the audience or gesturing with my hands. Then we built on them."

TIP 3

PRACTICE MAKES PERFECT

Davoust recalls a nightmare experience of several years ago when he had to fill in for someone else at the last minute. "I knew nothing about the au-

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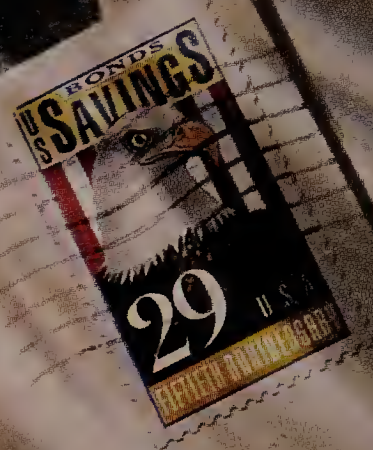

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dience, and I'd never seen the slides. It was a recipe for disaster."

Such quandaries can be avoided by ferreting out as many details as possible beforehand about the audience; other speakers; the size, decor, and lighting of the room; the audiovisual setup; the position of the podium; and so on. Then practice, practice, practice. Weissman advocates going through several rehearsals with your slides; loading them into the carousel yourself; and knowing your presentation cold. "If you can't remember your presentation, nobody else will." Myers practiced her dog and pony show through more than half a dozen sessions with Weissman and many more hours without him. "I've learned that slapping together a presentation during an hour on the plane the day before doesn't cut it," she notes. "Now I take at least two weeks to prepare a talk. I let it cool off for a day after I sketch out my ideas, and then come back later to refine it."

TIP 4

CONNECT WITH YOUR AUDIENCE

Podiums, pointers, slides, and notes "create barriers between you and your listeners," points out Weissman. The best speakers don't rely on external tools, but keep the audience's focus on themselves with expressive hand and facial gestures.

Jargon is another barrier, says Davoust. During his nightmare experience, instead of explaining how to build an effective graph in terms that his business audience could have understood, he waxed theoretical about rasters and vectors. "I saw all the eyes in the audience glaze over," says Davoust. Presenters fall into technobabble, explains Weissman, because "they assume everyone else knows as much as they do."

On the other hand, using listeners' business vocabulary will make them prick up their ears, says Weissman. Investors, for example, respond to phrases like "barriers to entry," "installed base," "market share," and "strategic relationships." Likewise, it's important to make the presentation relevant to the audience, even if it means saying something as simple as 'It's great to be in St. Louis.' Tone is also a consideration. Says Davoust: "I don't use 'I' or 'you'; I say 'we.'"

TIP 5

ENTER THE COMFORT ZONE

Even experienced speakers occasionally have to cross the Sahara of stage fright. To loosen your stranglehold on the podium, Myers suggests an effective trick: "Instead of addressing the room, talk for a few seconds to one person, then another, then another,

then another. This helps you feel more at ease because it's like having a one-on-one conversation."

Davoust adds that most presenters get nervous because they're not familiar enough with their material. The flat-out petrified should try to identify the source of fear: "Once you know what's making you uncomfortable, you can gain some control over it."

TIP 6

EASY ON THE GRAPHICS

When presenters haul out the heavy artillery—say, a 100MB 386 laptop and a snazzy graphical presentation replete with slide show—they create a false sense of security for themselves. "It's easy to go crazy with sophisticated technology," says Weissman. "It's like putting a Ferrari Testarossa in the hands of a 12-year-old."

Speakers get into the most trouble when grappling with graphics. Too many colors, bullets, fonts, and data charts can create a murky slide-show stew. "I discovered a long time ago that you should put only a few bullets on a slide," says Davoust. Most presentation trainers recommend having no more than six lines per slide and ten words per line. Use colors conservatively and for emphasis only, with an eye to the lighting and color of the room. The single most important graphics rule? "Don't overdo it," emphasizes Davoust.

Weissman recommends "building" slides. If you're using three or four slides to explain a concept, reveal the title slide first; on the next slide, show the title along with the first supporting point. On the following slide, display the first and second points, highlighting the latter, and so on. Building the concept makes it easy for the audience to absorb.

TIP 7

GO FOR IT—BUT REMEMBER MURPHY'S LAW

While most presenters send their graphics out of house for conversion into 35mm slides, many are choosing the more cost-effective, flexible, and efficient option of electronic presentations, which can be run directly from a laptop on a large-screen VGA monitor.

Myers uses IBM's *Storyboard Plus* to create her screens: "With this kind of program, you can add a slide at the last minute—even on a plane." She sets up templates that she uses over and over again, "so it's very simple to put in new text for every slide set; I know exactly what will fit on each slide." She also arranges for a large-screen monitor or a rear-projection unit to be installed at the presentation site, and then runs the slide show on her Compaq LTE 386 laptop, which she usually stows inside the podium.

What's the hitch? "Murphy's Law," says Weissman. "Anything that can go wrong will." The more technology involved, the more potential problems. For this reason, trainers recommend

packing extras of everything as far as possible, including hardware, software, floppies, monitor, cables, and audio components.

TIP 8

Q AND A THE REAGAN WAY

The question and answer session can be the toughest part of any presentation, particularly if the audience is inquisitive or hostile. Good presenters begin by announcing the length of time they will devote to answering questions. They repeat or rephrase questions for the rest of the audience to hear, and they select questioners by starting at one side of the room and moving across to the other.

Regardless of their political stripe, speaking pros like to point to Ronald Reagan as the master of the Q and A. Whenever Reagan answered a question, notes speaking trainer Bill Koefoed, president of San Francisco–based William A. Koefoed Associates, "he ended with a PR statement, like 'One of the most important things we have to do is understand the needs of the taxpayers.'" A commanding speaker will rephrase an antagonistic question in a neutral way and end with a PR statement. For example, if you are asked why your product is so expensive, respond with "The question is about our pricing strategies." Then present the facts neutrally, summing up with a statement such as, "We want to give our customers the best possible value for their money."

But pulling off a PR statement doesn't mean trying to put one over on the audience. "People always know whether a speaker's genuine or not," cautions Vonderschmitt. "Credibility is everything."

TIP 9

LEAVE THE WHOOPEE CUSHION AT HOME

Poor presenters often rely on canned humor. "Presentation gimmicks have become a cottage industry," says Weissman, with obvious distaste. "They're insincere."

Koefoed mildly disagrees. "I like graphics and cartoons because they can make a point fast," he notes. "Humor used tastefully can be effective."

Both Weissman and Koefoed agree that people who are neither funny nor natural storytellers should steer clear of attempts at humor. But, adds Koefoed, "Just about anybody can tell a one-liner in spontaneous situations."

DO...

- understand your audience.
- make your story clear.
- practice often.
- be sincere.
- address individual audience members.
- be animated.
- bring extras of everything just in case.
- keep the audience's attention on you.
- allow time for points to sink in.
- focus your material.

DON'T...

- assume the audience understands your business.
- digress.
- use jargon.
- put too many words or colors on a slide.
- tell jokes or use gimmicks.
- depend on the podium.
- rely on notes or pointers.
- talk to the ceiling, walls, or floor.
- glue your hands in one place.
- speak in a monotone.

TIP 10

TEMPO ADAGIO

Like symphony conductors, good speakers have a well-developed sense of timing and tempo. "Some speakers are afraid of silence, but it's a powerful tool," says Weissman. Even hyperactive speakers, he insists, can learn to wait for a point to sink in and then move on. "You don't want to slow down. You should speak at a natural speed, but keep the hesitations in between."

THE SEARCH FOR PERFECTION

Becoming a master communicator is like learning to play a stinging game of tennis—it demands self-discipline, time, patience, and commitment. It also helps if you have a good coach. Cypress Semiconductor CEO T. J. Rodgers, says of Weissman: "I'm like a high-school star, and he coaches the Celtics."

With enough time, practice, and coaching, even nervous tics can be turned into audience warmers. Bill Gates, for example, learned to convert a habit of pushing his glasses back on his nose into a trademark. By the time he took the podium at last year's COMDEX Fall, the world's largest trade show, Gates had shed his nerd image. Instead, wrote *USA Today,* he was a "polished, elegant, black-suited orator." Gates's comment? "Well, we're a little more elaborate now."

Bronwyn Fryer is an associate editor for PC World.

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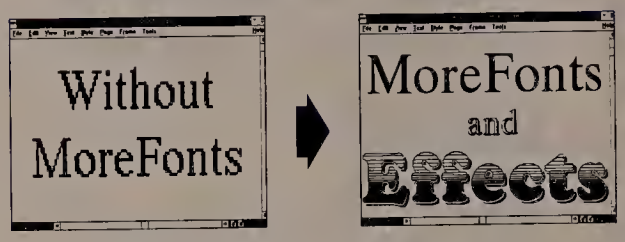

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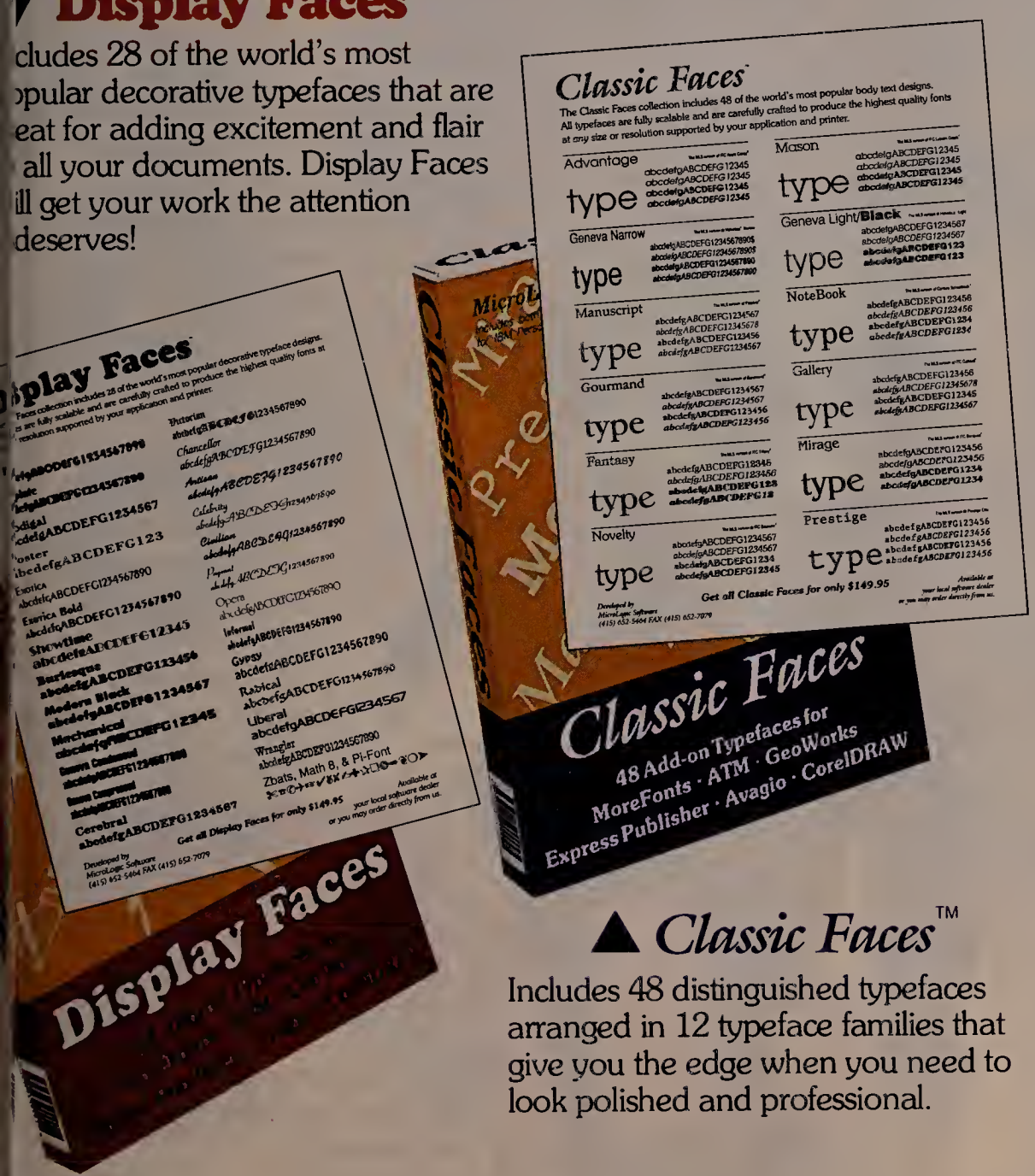

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MULTIMEDIA

BUYERS' GUIDE
CD ROM Software
Page 244

HOW TO
Build Your Own Multimedia Presentation
Page 250

BUYERS' GUIDE
Multimedia Authoring Software
Page 258

Edited by Robert Luhn

Special WINDOWS REPORT

Buyers' Guide

CD ROM *Software*

Multimedia may not have arrived at your office yet, but these 15 entertainment, reference, and education CDs hint at what's to come in tomorrow's powerful business applications.

William Rodarmor

Ever watch kids play arcade games at the mall? The rapt concentration, the total involvement those games elicit, comes from the way they fully engage the senses—vision, hearing, and touch. Players interact with the game instead of just being passively receptive. That kind of active engagement is what multimedia promises for the future of computing—even, unlikely as it may seem, for business software.

However, the first off-the-shelf multimedia applications have little to do with business. Instead, expect to exercise your hand-eye coordination playing arcade-style games such as *Stellar 7* and enrich your knowledge of music history with *Composer Quest.*

To run these amusements, you'll need a PC with a CD ROM drive, a sound board, speakers, and decent graphics. We ran the software in this guide on an early entry in the multimedia PC (MPC) race—the Tandy 4025 LX Multimedia (the company also offers upgrade kits for its other systems). Shipping in October, the LX is the first multimedia machine on the market, but it certainly won't be the last. Besides Tandy, such major players as Fujitsu, CompuAdd, Philips, and IBM are also working on MPCs. Soon a range of boxes will play those shimmering CD ROM disks, but for now, Tandy's LX is your spaceship to ride.

Many of the multimedia programs listed in this Buyers' Guide—several of which weren't shipping at press time—are still fairly primitive, and some don't run under *Windows. Compton's Multi-Media Encyclopedia,* for example, lets you watch Martin Luther King, Jr. deliver his "I have a dream" speech, but King appears only in a black-and-white photo, and the speech is a 20-second sound bite.

Still, lots of tantalizing programs are on tap, whether you have an interest in the Civil War, a passion for Beethoven, or you simply want your kids to spend a few hours with Sierra On-Line's surprisingly engaging *Mixed-Up Mother Goose.* We've assembled the following gallery to show you the variety of multimedia programs out there and to whet your appetite for those to come.

GORDON STUDER

Education

COMPOSER QUEST

This *Windows*-based program tests and expands your knowledge of the great composers from the year 1600 to the present. It plays segments of music while displaying newspaper headlines and notes on major social and political events of the time. Choose '1900', for example, and you'll see the headline 'Boxer Rebellion in China', hear a few bars of "Maple Leaf Rag," and see pictures of three composers to choose from. You picked Scott Joplin, right? Dr. T's Music Software, 100 Crescent Rd., Needham, MA 02194; 617/455-1454, 617/455-1460 (fax). List price: $99. *Reader service no. 621*

LEARN TO SPEAK SPANISH

Games, music, and cultural information accompany 30 lessons in pronunciation and vocabulary taught by native speakers. In the prerelease *Windows* version, punching an on-screen "play" button caused the machine to enunciate such phrases as *Buenos dias.* As you hear the phrase, a small oscilloscope-type device shows the pronunciation graphically. The idea is to listen to the machine say the phrase, try to say it yourself, and then repeat the process until you sound like your computer. English and French versions are planned. HyperGlot Software, P.O. Box 10746, Knoxville, TN 37939-0746; 800/726-5087, 615/688-6569 (fax). List price: $99. *Reader service no. 622*

MAMMALS: A MULTIMEDIA ENCYCLOPEDIA

While this "encyclopedia" includes more than 700 pictures, movie clips, animal calls, range maps, and vital statistics, *Mammals* is really a teaching tool. Ac-

companied by roars, howls, and charging tigers, the program offers kids ages 8 through 12 a wealth of information. A playful game lets them identify and search for animals around the world. National Geographic Society, 1145 17th and M Sts. NW, Washington, DC 20036; 800/368-2728, 301/921-1575 (fax). List price: $149.95 ($99 to educators). *Reader service no. 623*

Entertainment

JONES IN THE FAST LANE

Poor Jones! He struggles to get an education and get ahead in a world where "Astro Chicken" costs $117. Jangling music plays as you send Jones to the bank, employment office, or the "Socket City" appliance store. In the prerelease version, animated talking heads, ranging from bearded professors to female factory owners, offer Jones jobs and advice. Sierra On-Line, Inc., P.O. Box 485, Coarsegold, CA 93614; 209/683-4468, 209/683-3633 (fax). List price: $39.95. *Reader service no. 624*

LEISURE SUIT LARRY

Perennial antihero Leisure Suit Larry is the ultimate womanizing creep in this interactive game (the CD ROM version ships in January). Leading Larry through his barhopping misadventures regularly brings him messy death as he seeks love and romance. (Well, maybe just love.) In the version we saw, Larry gets flattened outside the bar, drowns when its toilet overflows, and more. There is no sound other than what's on the bar's Wurlitzer, but text speech balloons let you know why Larry is striking out. *Larry* is a treat for the truly insensitive. Sierra On-Line. List price: $59.95. *Reader service no. 625*

MIXED-UP MOTHER GOOSE

Kids ages 6 through 10 will be engrossed as they wander around Mother Goose land retrieving items lost by its nursery rhyme characters (Peter P. Eater misplaces his wife, for example). The program sports good graphics, annoying music (you can turn it down or off), funny accents, zany choral singing, and a solid lesson in map reading. A multilingual version requires a special sound board. Sierra On-Line. List price: $59.95. *Reader service no. 626*

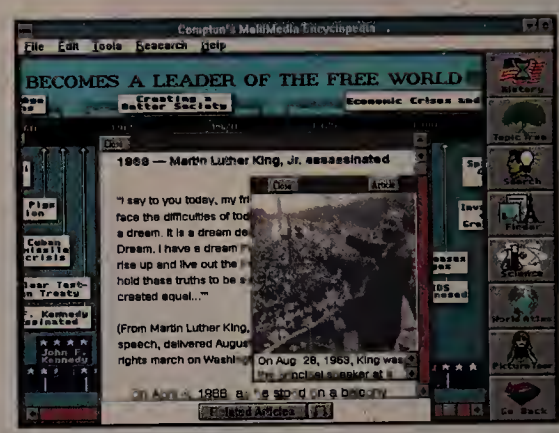
STELLAR 7

At last a chance to match wits with evil Gir Draxon, master of the Arcturan Empire. During a shootout at the Terran corral, this fast-action game brings loud and explosive humiliation to the slow of trigger. Missiles whiz and thump, weapons crackle, and the warp-speed transitions to other solar systems are gorgeous. The preview version that we played left us breathless. Dynamix, 99 W. 10th St. #224, Eugene, OR 97401; 800/326-6654, 209/683-3633 (fax). List price: $34.95. *Reader service no. 627*

Reference

COMPTON'S MULTIMEDIA ENCYCLOPEDIA

This slickly produced *Windows* program gives quick access to articles, photos, and recordings on topics that include history, science, and the human body. Clicking on camera or headphone icons produces high-quality color photos or stereo sound bites such as a 20-second excerpt from Martin Luther King, Jr.'s "I have a dream" speech. Britannica Software, 345 Fourth St., San



Francisco, CA 94107; 800/533-0130. List price: $895. *Reader service no. 628*

COUNTRIES OF THE WORLD

This reference disk draws on government files—the U.S. Army's 106 *Country Series Handbooks*—for text on the politics, history, culture, and statistics of nearly every nation on earth. Color and black-and-white maps and photos enliven the text and tables. Bureau of Electronic Publishing, 141 New Rd., Parsippany, NJ 07054; 800/828-4766, 201/808-2676 (fax). List price: $495. *Reader service no. 629*

GREAT CITIES OF THE WORLD (VOL. 1)

This *Windows* travel guide offers sounds and photos of Los Angeles, New York, London, Paris, Bombay, Cairo, Moscow, Sydney, Tokyo, and Rio de Janeiro, plus tips on hotels, restaurants, sightseeing, and more. A good travel book supplies the same data, but the disk can also play local music and speak useful phrases. The prerelease version has attractive slide shows of Sydney and Rio. InterOptica Publishing, Ltd., 1213-1218 Shui On Centre, 6-8 Harbour Rd., Hong Kong; 852/824-2868, 852/824-2508 (fax). List price: $149. *Reader service no. 630*

THE GUINNESS MULTIMEDIA DISC OF RECORDS 1991

This *Windows* collection can reveal the world's longest beard, the most-mar-

Tandy's All-Terrain Multimedia Machine

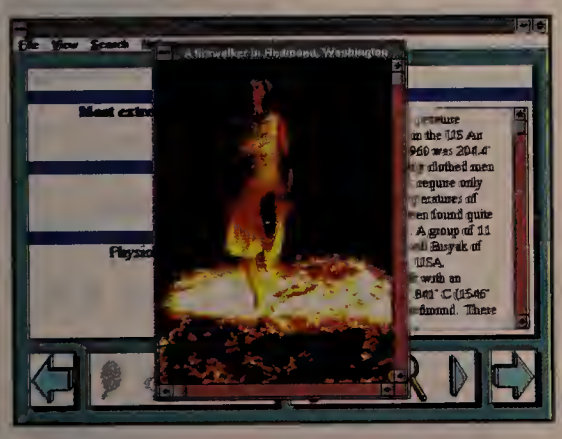
The 4025 LX Multimedia is a souped-up 25-MHz 386 loaded with goodies such as Tandy's CDR-1000 CD ROM drive and a 16-bit super-VGA card that delivers all the action and power of multimedia.

System: 25-MHz 386 with 4MB RAM. *Drives:* 3½-inch 1.44MB floppy drive, 105MB hard drive, and Tandy's CDR-1000 internal CD ROM drive. *Video:* 512K video DRAM and 16-bit super-VGA; supports 256 colors in 320 by 200 and 640 by 480 resolutions and 16 colors in 800 by 600 and 1024 by 768 resolutions. *Software:* MS-DOS 5.0, Windows with Multimedia. *Availability:* October 1991.

WHERE TO BUY *Tandy 4025 LX Multimedia*, Tandy Corp., 1800 One Tandy Center, Fort Worth, TX 76102; 817/390-3011. List price: $4999 (without monitor) *Reader service no. 619*

SCOTT PETERSON

ried monarch, and nearly 7000 other fascinating factoids. However, the disk's text search program is clumsy, and its 300 photos (most in grainy color) never seem to illustrate the juicier items. Britannica Software. List price: $149.95. *Reader service no. 631*



MULTI-MEDIA BIRDS OF AMERICA

Can't tell a plover from a pileated woodpecker? This disk covers all the North American birds in John James Audubon's seven-volume 1848 edition of *Birds of America.* You get the full text, 500 color plates, plus many stereo recordings of bird calls. Also from CMC, at $79, *Multi-Media Audubon's Mammals.* CMC ReSearch, 7150 S.W. Hampton #C-120, Portland, OR 97223; 800/262-7668, 503/639-1796 (fax). List price: $99. *Reader service no. 632*

USA WARS: CIVIL WAR

A history buff's delight, this disk uses text and still photos to tell tales such as why Confederate major general "Maverick Danny" Hill, who fought valiantly at Antietam, failed to make lieutenant general. (He rashly criticized Generals Lee *and* Bragg). Two tracks of the CD play Civil War–era songs performed on period instruments by Alabama musician Bobby Horton. Quanta Press. List price: $129. *Reader service no. 633*

USA WARS: KOREA

This complete history of what Quanta quaintly calls "the Korean police action" includes extensive text, dramatic black-and-white still photos of the fighting, and recorded interviews with Korean War veterans (some profanity, parental discretion advised). Quanta Press, Inc., 2550 University Ave. W #245N, St. Paul, MN 55114; 612/641-0714, 612/644-8811 (fax). List price: $129. *Reader service no. 634*

WORLD FACT BOOK

This compendium on the politics, geography, and culture of the countries of the world is compiled annually by the spookmasters at the CIA. It includes flags, national anthems, and somewhat hohum maps. Hear "The Marseillaise," see a color photo of the Paris City Hall at night. Vive la France? Bureau of Electronic Publishing. List price: $99. *Reader service no. 635*

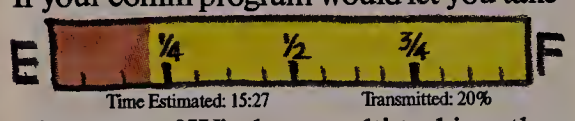
William Rodarmor is the managing editor of California Monthly, *the UC Berkeley alumni magazine, and a former* PC World *associate editor.*

For more information about all products in this article, circle reader service no. 902.

How To Get Into PC Communications Without Jumping Out Of Windows

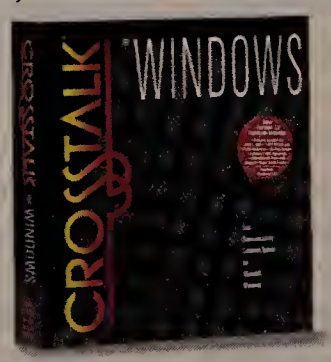
You forget how wonderful Windows™ is until you have to exit it to transfer a file.

Since most communications software won't work in Windows, you're left sitting on your hands watching a "gas gauge" as your file transfer crawls from start to finish. If your comm program would let you take



advantage of Windows multi-tasking, then you could minimize it to a simple icon while you carried on with something else (like the spreadsheet you promised your boss an hour ago).

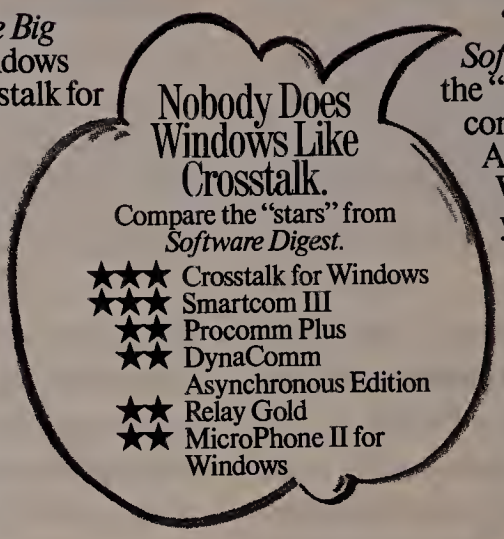
Well, with Crosstalk® for Windows you can.



It's All In The Background.

Not only does it keep you in the point-and-click world of Windows, but more importantly, it lets you establish connections, and send and receive files–*all* in the background. In fact, while you're busy on another project, Crosstalk for Windows can be answering calls, dialing a queue of numbers, transferring data or keeping a VAX® link open. Think about it.

You can prepare *"The Big Presentation"* on your Windows word processor while Crosstalk for Windows is calling Dow Jones News/Retrieval® and capturing stock information. Then, you can cut and paste the appropriate Dow Jones data right into your presentation. Or import it transparently through DDE. You can even automate repetitious jobs (like that daily call to collect data from branch offices) by writing scripts or using the Learn feature.



"Product of the Year." *Software Digest* called it the "Best of the graphical communications packages." And *PC Magazine* told Windows shoppers, "If you're a Windows fan shopping for a communications package, Crosstalk for Windows is a sure bet."

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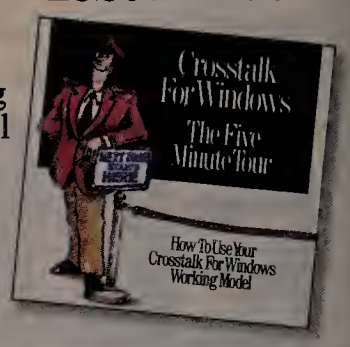
Spend 5 minutes with our working model–and you'll never want to jump out of Windows again.



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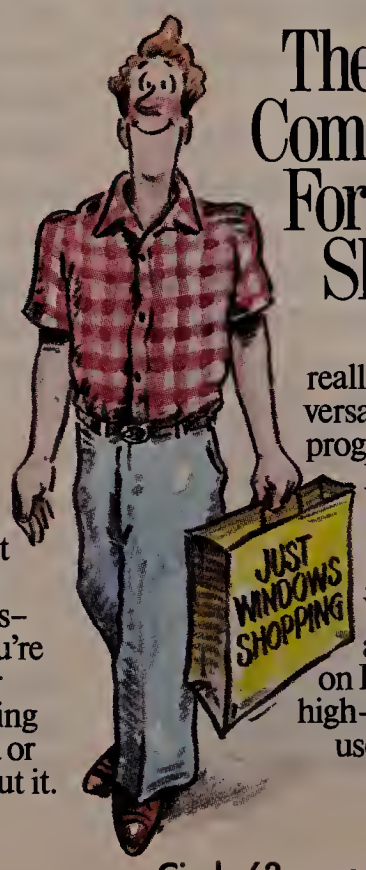

The Ultimate Comm Package For Windows Shoppers.

Crosstalk for Windows really is one of the most versatile communications programs on the market today. It supports the most popular protocols and emulations, including ZMODEM and VT™220/VT320. It can access shared modems on LANs and also supports high-speed modems. Yet, it uses only 150K RAM. *Info World* named it

CROSSTALK

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Special WINDOWS REPORT

How To BUILD YOUR OWN *Multimedia Presentation*

You don't need a Star Wars budget or a computer science degree to hop on the multimedia bandwagon. Here's a step-by-step guide to creating a multimedia presentation.

Erik Holsinger

Multimedia is the next big step in making PCs truly personal. Instead of dully responding to commands, a multimedia application can interact with users by giving them *random* access to any part of the presentation they desire. Such an application can also integrate animation, stereo sound, full-motion video, and cinematic effects (such as wipes and dissolves) to make its point tellingly. Multimedia can teach, entertain, sell new products, or simply make business presentations sizzle.

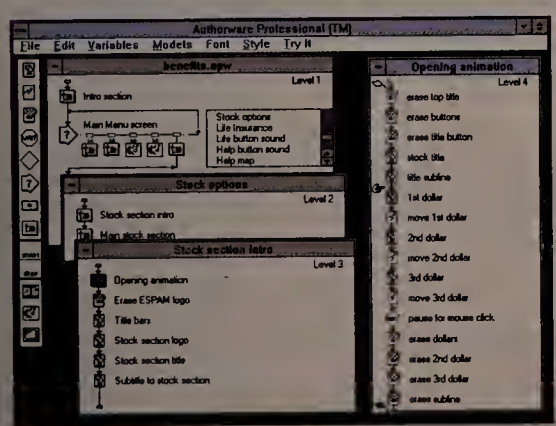
In the future, every business application—from spreadsheets to electronic mail—will reap the benefits of multimedia on PCs that come with CD ROM drives, advanced graphics displays, and sound boards. But here and now, interactive training and presentation applications are at the vanguard of multimedia's foray into business.

Multimedia has its roots in traditional presentation programs such as *Harvard Graphics.* However, creating an interactive multimedia application incorporating sound, motion, and all the trimmings is a much more complicated process than producing a typical self-running, monitor-based slide show and requires a much more powerful tool: authoring software. Use authoring software to create, say, a training application for your sales staff, and you'll find yourself up against a task as complex as programming.

Chances are, however, you won't be creating a multimedia application yourself—using authoring software and getting all the necessary (and sometimes cranky) software and hardware to cooperate isn't for the fainthearted. But your in-house developers or outside consultants probably *will* face this task, and chances are they'll be working with one of the new icon-oriented, *Windows*-based authoring programs. To give you a good idea of what's possible, follow along as we create an interactive employee benefits presentation using *Authorware Professional*, a breakthrough authoring program (in this genre). Although we used a prerelease version, the shipping program, due out by the time you read this, should offer all the functions shown here and more.

PLAN YOUR PROJECT

Presentation programs don't rely on storyboards and outliners for nothing—these are perfect tools for planning a



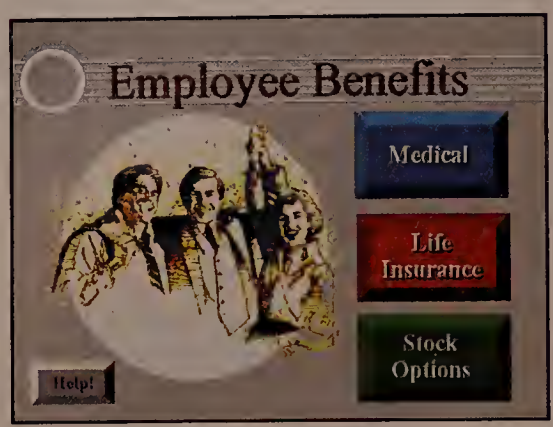
show's overall execution. *Authorware* takes a similar tack by adopting a top-to-bottom flowchart that uses icons to represent graphics, sounds, animation, and video. You can map out the structure of a multimedia presentation, then go back and add animation sequences, program branches, and so on.

Like a slide show, each icon executes in sequence. You can reorder and copy icons and other elements; to simplify, you can pull related icons into groups or levels. In the screen shown at left, you can see how the opening animation sequence (which moves dollar bills across the screen) is stored in level 4 below the main flowchart.

If you want the application to interact with users—say, asking for input that changes the direction of the presentation—you simply drag the appropriate interactivity icon from the toolbox and plug it into the flowchart. Creating different forks in the road, known as *branches*, at any point in the program is done in a similar fashion.

CREATE THE OPENING SCREEN

Our employee benefits presentation consists of three major sections: Medical, Life Insurance, and Stock Options. On



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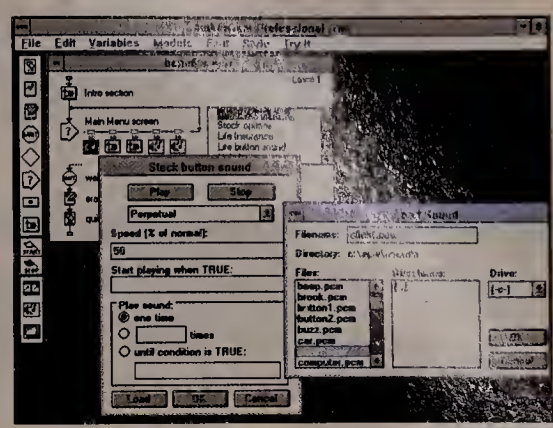
the opening screen, shown at the right on the preceding page, an employee can click on a button to view the desired section, and the presentation will branch off to that portion. To create this screen, you must import all the graphics and text that will appear on it—a task that can be nearly as time-consuming as creating the application itself.

Authorware has limited drawing and font features, so you'll have to import complex graphics and some of your text from other sources. *Authorware*, for example, can scale text to only 24 points, so you must import text from a paint or draw program or use a font manager to create larger type sizes. We created this screen's text in *Authorware* using *Adobe Type Manager*; as a decorative touch, we added the jubilant employees from a clip-art collection.

ADD SOUND FOR INSTANT FEEDBACK

Sound is a key element in making a multimedia presentation interactive and convincing. In our presentation, an employee will hear a beep after clicking

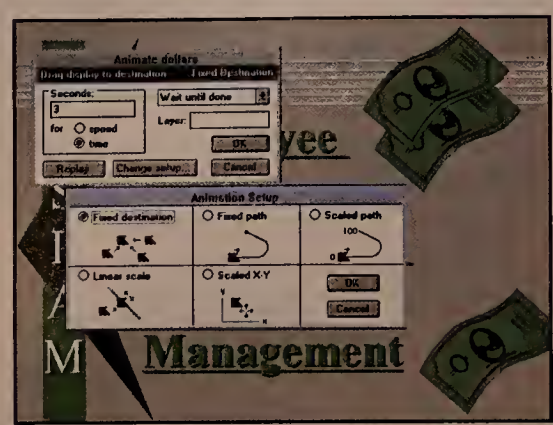


on one of the buttons in the presentation's opening screen, making the experience more realistic. For entertainment's sake, a musical theme sounds when the opening screen appears.

You can pull sound into an application by using stock sound files supplied by *Authorware*, playing it off a laser disk or VCR player, or *sampling* (recording) it with a microphone attached to a sound board. *Authorware* represents a captured sound as an icon that you can place anywhere in the flowchart; like most elements, sound can be triggered by a clicked button, the appearance of a specific image, or other events. Double-click on a sound icon, and you can specify playback speed, duration, and other options from pop-up dialog boxes (see the screen shown above).

ENTERTAIN WITH ANIMATION

If an employee selects the Stock Options section of the presentation, the screen shown below (minus the dialog boxes) will appear to introduce the viewer to that section. It includes the title—ESPAM (Employee Stock Participation Annual Management)—of the compa-



Getting Started

Thanks to falling hardware prices, setting up a dedicated multimedia workstation with *Authorware* or similar authoring programs is almost economical. A typical system might run $16,000 or more, including the $8000 *Authorware* software. The minimum computer hardware necessary is a *Windows*-ready PC: a 386 with 4MB of RAM, a 40MB or larger hard disk, and a super-VGA display. You'll also need a sound board, such as the $299 Sound Blaster from Brown-Wagh Publishing, and a set of speakers. For full-motion video, you'll need a laser disk player and a video overlay card. The laser disk player is where video is stored, and the overlay card converts video images into a format that can be displayed on a VGA monitor.

You must also take into account the type of system you'll use to play back the multimedia application. At the very least, the development and playback systems should have the same video setup—you can't create a super-VGA application and run it on a CGA system. And although the MPC Marketing Council's proposed minimum standard for running multimedia is a 10-MHz 80286 PC with 2MB of RAM, a 30MB hard disk, and a VGA display (an approximate system cost of $3000), this setup is painfully slow for most multimedia applications. If you want sound and video in the presentation, the playback system should have the same laser disk player, video overlay board, and sound board as the development system. If the overlay boards ($695 to $2495) bust your budget, you can use a TV monitor to display video separately.

Multimedia may seem like an expensive proposition, but consider how much your company spent last year on meetings, manuals, and so on in order to explain company benefits to employees or to train sales representatives. Consider, too, that producing a 30-minute training video can easily cost $60,000. If a picture is worth a thousand words, an interactive multimedia application is worth volumes.

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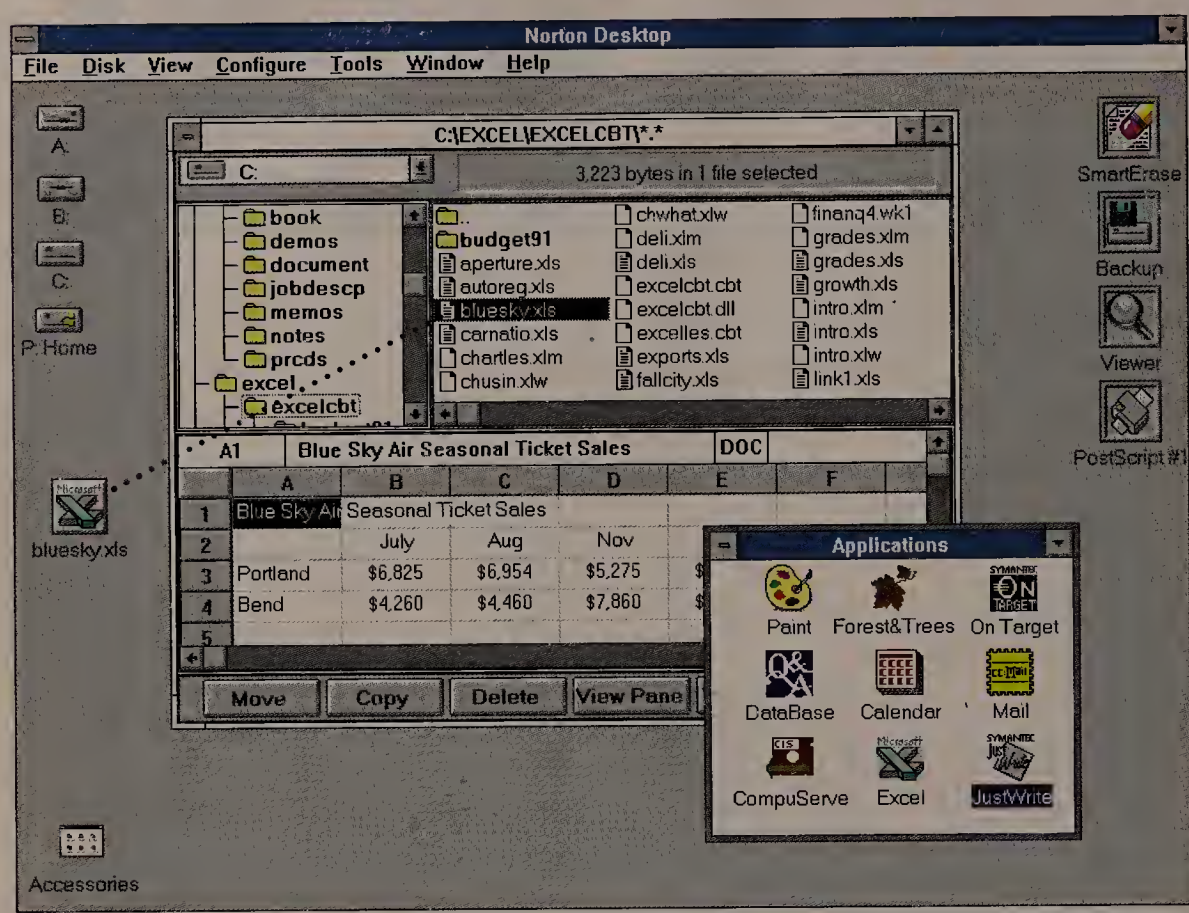

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—PC Computing, August '91

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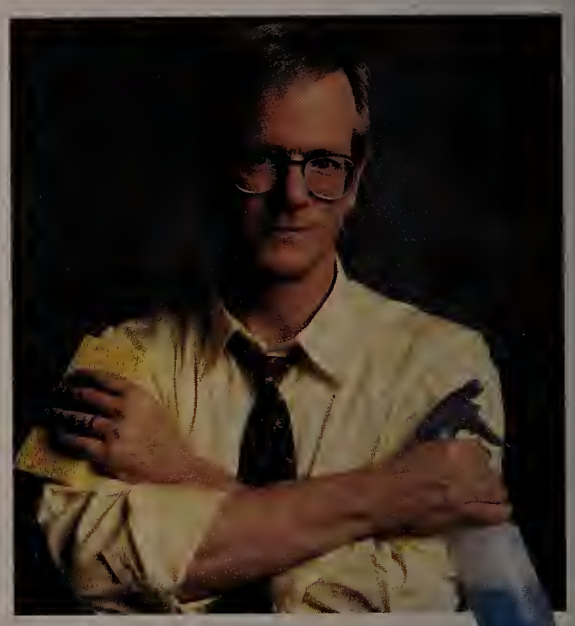

Peter Norton

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ny's stock options program and simple animation to hold the viewer's interest. *Authorware*, however, hasn't quite achieved state-of-the-art animation. As this screen shows, you can take static images and have *Authorware* move them around the screen in limited ways. In this case, the dollars drop from the sky and land in a pile; then the image dissolves and is replaced by a screen showing employee stock options.

Unfortunately, the first release of *Authorware* won't directly import animation files generated by powerful PC programs such as Autodesk's *Animator* and *Animator Pro*. That means you may have to create sophisticated animation on a Mac and port it over.

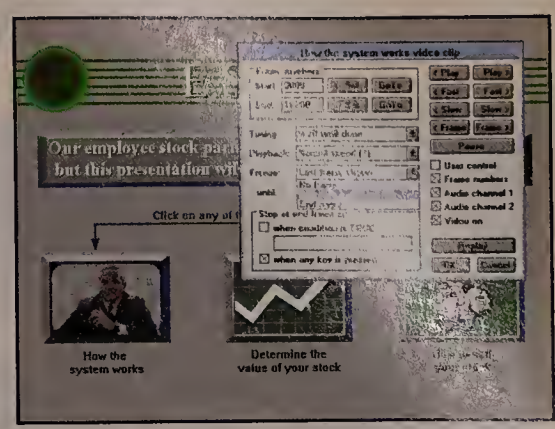
MAKE YOUR PRESENTATION COME ALIVE WITH VIDEO

After the Stock Options introductory screen, the viewer will automatically see the screen shown at right, which provides three branching options. We've incorporated video into the first option as an effective, entertaining way to present dry yet important information. After an employee clicks on 'How the system works', a video window appears showing a friendly CEO explaining the company's employee stock program.

But adding video to an application—even using *Authorware*—involves hassle and expense. The video has to be stored on either a laser disk or a videotape (see "The Multimedia VCR," below), and you'll need a video overlay board to display images on a PC.

A laser disk player is the best video source because its access time is far faster than a VCR's and it can hold up to 30 minutes of video per side. Laser disks can also store still images and CD-quality audio that can be accessed by *Authorware* applications.

Once you've linked with a video



source, click *Authorware*'s video icon and you'll get a VCR-like panel that controls how video, sound, and individual frames are used by the application. You can dictate playback speed, what triggers the video playback, and start and end frames.

In theory, it works great. Unfortunately, the prerelease *Authorware* has problems displaying video—something that *should* be fixed by the release date. The lesson here? Don't assume that a multimedia authoring program can incorporate video or animation. Capabilities vary and will naturally increase as *Windows* gains multimedia muscle.

Even so, the new breed of *Windows* multimedia programs lets you do a lot. Traditional authoring programs, while powerful, aren't particularly intuitive. In comparison, *Authorware* is relatively simple yet capable. If you want a quantum leap beyond *Harvard Graphics*—or for that matter, most *Windows* programs—the time is almost ripe.

Erik Holsinger is a former senior editor for NewMedia Age *and a freelance video and multimedia producer in San Francisco.*

WHERE TO BUY

Authorware Professional for Windows 1.0
$8000 (training included); Authorware Inc., 275 Shoreline Dr. #535, Redwood City, CA 94065; 800/288-4797, 415/595-3077 (fax)
Reader service no. 638

The Multimedia VCR

Although laser disks are the preferred video source for multimedia developers and users, they're not the best tool when you're pulling together a last-minute multimedia presentation. An industrial laser disk recorder is far too expensive for infrequent use, and pressing a master laser disk can cost $1800 and take two weeks.

The answer might be units such as NEC's PC-VCR. Attach this VCR to your PC's serial port, and you can embed a computer-readable timing code on videotapes without erasing existing pictures or sound. That means your multimedia program can find and play anything on the tape. Like most tape units, the PC-VCR is much slower than a laser disk player—it can take over 2 minutes to spool to the far end of a tape—and video and audio quality will inevitably degrade over time.

The PC-VCR comes with DOS and *Windows* video editing software, and the makers of *Authorware* have announced their support for the drive. What's still unclear is how seamless the integration between software and machine will be.

WHERE TO BUY *PC-VCR*, $2100, serial cable $55, Scene Master editing software $299; NEC Technologies, Inc., 1255 Michael Dr., Wood Dale, IL 60191; 800/366-3632, 708/860-5812 (fax). *Reader service no. 639*

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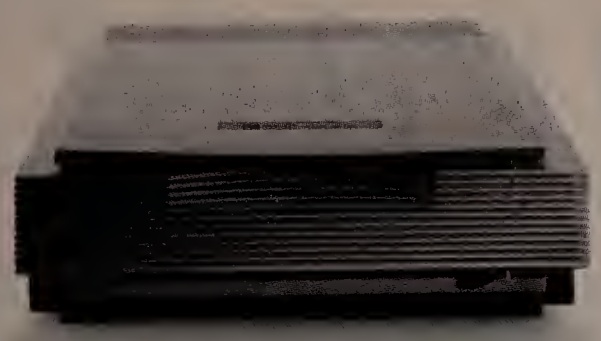

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Want to add sound and video to your next business presentation? Check out the new breed of multimedia development tools.

Dan Miller

Like making a movie, creating a multimedia application with an authoring program is a specialized job, yet it requires a variety of skills and resources. But if you're in the business of making presentations, training personnel, or putting together audiovisual productions, the impact and unlimited variety of custom interactive applications are worth the effort—even if you have to hire a professional developer to produce them.

Though many of the packages listed below claim to be jacks-of-all-trades, most of them fall into one of two areas of expertise. If you'd like to add sound and video to business presentations, then *ACT III, Action, Ask Me, Audio Visual Connection, IconAuthor,* and *Storyboard Live* are worth a closer look. If you want interactivity for such applications as training manuals, consider *Authology, Instant Replay Professional, InterFlex, Quest, SAM V,* or one of the *TenCORE* packages.

Other packages address more specific needs. *SantaFe Media Manager* creates multimedia data bases. *Guide* and *Publisher's Toolkit* translate existing documents into an interactive, multimedia form. The new version of Asymetrix's *ToolBook* specializes in *Windows* programming. *PLUS* applications run on both PCs and Macs. *GRASP* emphasizes high-end animation programming.

These packages start at $300, so it's possible for anyone with the appropriate graphics and sound hardware to get in on the action. Even the high-end packages, which can cost nearly $5000, are a bargain compared with the cost of creating a videotape out of house.

ACT III is positioned as an all-purpose package that lets nonprogrammers create a variety of interactive presentations. It combines a word processor, animator and paint modules, a music and sound editor, and programming utilities. The program supports MIDI sound files and CD ROM audio. Informatics Group, Inc., 100 Shield St., West Hartford, CT 06110; 800/348-1377, 203/953-7407 (fax). List price: $495. *Reader service no. 602*

WINDOWS **ACTION** is a presentation tool from the creators of *Director*, one of the premier presentation/animation tools for the Mac. You begin the *Action* process by defining objects such as graphics and text. Using built-in animation and sequencing tools, you choreograph the way these objects will appear on screen, attach sound and video effects, and create buttons. Click on the buttons to make the presentation branch to other sequences. MacroMind, Inc., 410 Townsend St. #408, San Francisco, CA 94107; 415/442-0200. List price: $495. *Reader service no. 603*

ASK ME 2000 AND ASK ME PROFESSIONAL are general-purpose presentation programs that coordinate input from a variety of sources, including Autodesk's *Animator*, sound boards, laser disks, and video boards. Both packages use Stratos, an English-like programming language, to define menus, touch-activated screens, and other screen elements. The professional version adds full-motion video capabilities and data base functions. *Ask Me 2000*, Brown-Wagh Publishing, 130-D Knowles Dr., Los Gatos, CA 95030; 800/451-0900, 408/378-3838, 408/378-3577 (fax). List price: $495. *Ask Me Professional*, Innovative Communication Systems, 112 Roberts St. #14, Fargo, ND 58102; 701/293-1004, 701/293-0431 (fax). List price: $1795. *Reader service no. 604*

AUDIO VISUAL CONNECTION 1.0 AND STORYBOARD LIVE should be of interest to PS/2 users, who can take advantage of IBM's line of PS/2-compatible multimedia hardware add-ons. *Storyboard* is for the casual user who can put together a presentation by pointing and clicking with a mouse. *AVC* is targeted toward professional developers. Its Audio Visual Authoring language lets you integrate MIDI sound files and incorporate more interactivity than is possible with *Storyboard*. IBM; 800/426-7699. List price: *Audio Visual Connection* $544; *Storyboard Live* $495. *Reader service no. 605*

AUTHOLOGY AND AUTHOLOGY: MULTIMEDIA specialize in computer-based training applications. *Authology* works with digital and analog sources, including VHS tapes, laser disks, CD ROM, and CD audio. *Authology: MultiMedia* is all digital, supporting Intel's DVI (digital video interface) standard. CEIT, 4800 Great America Pkwy. #200, Santa Clara, CA 95054; 408/986-1101, 408/986-1107 (fax). List price: *Authology* $2500; *Authology: MultiMedia* $4500. *Reader service no. 606*

GRASP 4.0 is a souped-up animator aimed primarily at programmers. *GRASP* includes its own programming language, paint utility, and special effects generator. Its Graphics Link Plus module combines image capture, file conversion, and printer utilities. *GRASP* also handles input from *Animator*, Sound Blaster boards, and video hardware. Paul Mace Software, 400 Williamson Way, Ashland, OR 97520; 800/523-0258, 503/488-1549 (fax). List price: $349. *Reader service no. 607*

WINDOWS **GUIDE 3.0** helps you assemble interactive reference materials from existing documents. A hypermedia package, *Guide* lets you define links between, say, a schematic diagram of a widget, a list of widget specifications, and a video clip of the widget assembly process. *Guide* users can point and click on menus or use Logiix, the program's Pascal-like programming language. OWL Int'l, 2800 156th Ave. SE, Bellevue, WA 98007; 800/344-9737, 206/641-9367 (fax). List price: $495. *Reader service no. 608*

WINDOWS **ICONAUTHOR 4.0** is a high-end authoring system that uses icons to represent either screen elements, such as text and graphics, or presentation processes, such as displaying, looping, and clearing the screen. Using a mouse, you place the icons along a flowchart to set their sequence. *IconAuthor* can use CD audio, MIDI sound files, and input from off-board video players. It also has a built-in animator. AimTech, 20 Trafalgar Sq., Nashua, NH 03063-1973; 800/289-2884, 603/883-5582 (fax). List price: $4995. *Reader service no. 609*

INSTANT REPLAY PROFESSIONAL can help you train computer users to work with new applications. With *Instant Replay* activated, you can record keystrokes and screens in other programs; you can then edit and enhance them with menus, imported graphics, and video from laser disk players and VCRs. Instant Replay Corp., 4525 S. Wasatch Blvd. #335, Salt Lake City, UT 84124; 800/388-8086, 801/272-0675 (fax). List price: $595. *Reader service no. 610*

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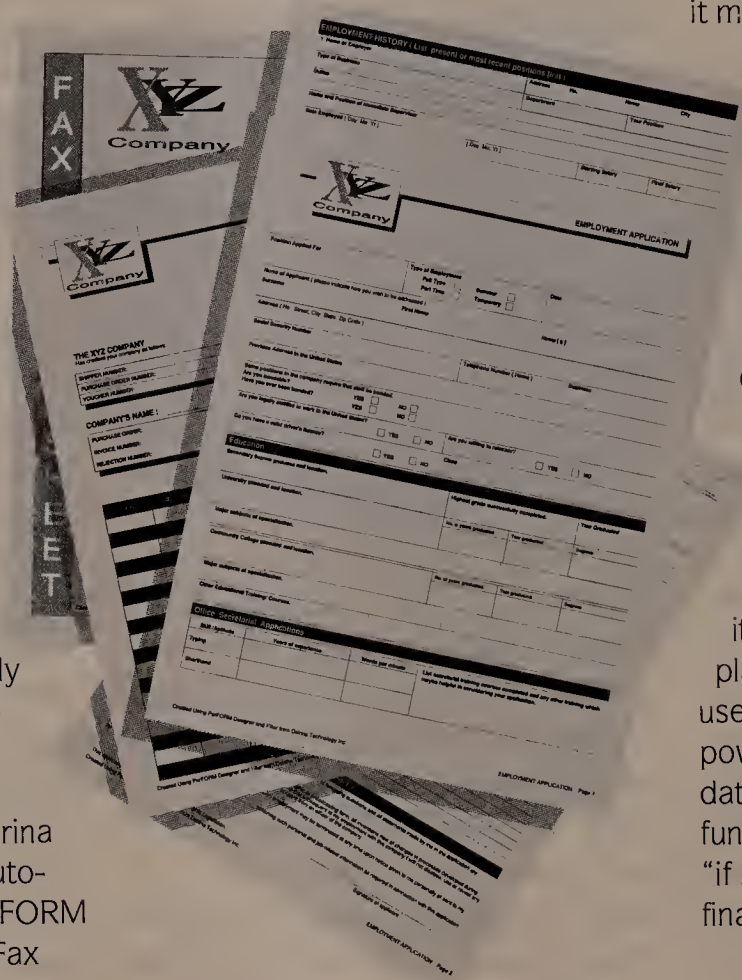

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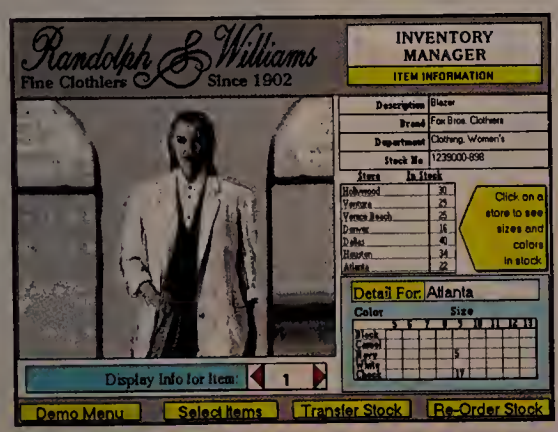
INTERFLEX is aimed primarily at educators, who can use the program's templates to create menus, pronunciation guides, and tests. *InterFlex* can parse and grade student input and repeat a lesson or go to the next, depending on the results. It offers an audio recording program (which requires additional hardware) and can control off-board laser disk players. Catharon Productions, Inc., Rt. 1, Box 8, Konig Rd., Ghent, NY 12075; 518/392-9003, 518/392-6444 (fax). List price: $2000. *Reader service no. 611*

WINDOWS **MULTIMEDIA TOOLBOOK** allows you to create multimedia *Windows* applications. Beginners can cut and paste predefined programming units, while more advanced authors can write program using C or any of Microsoft's *Windows* development kits. The program imports *Director* and *Animator* images and has a VCR-like control panel that can run an off-board video source. Asymetrix, 110 110th Ave. NE #717, Bellevue, WA 98004; 206/462-0501, 206/455-3071 (fax). List price: $300. *Reader service no. 612*

PLUS 2.5 specializes in hypermedia applications that can run on Macs as well as on PCs. Using its plain English, object-oriented PPL language, you can define links between text and graphics and also import *HyperCard* stacks. Spinnaker Software, 201 Broadway, Cambridge, MA 02139; 617/494-1200. List price: $495. *Reader service no. 613*

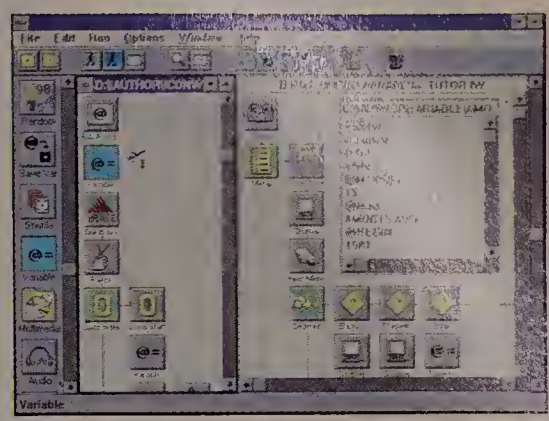


With authoring packages such as Spinnaker's PLUS 2.5, you can create interactive presentations combining text, graphics, video, and sound.

WINDOWS **PUBLISHER'S TOOLKIT,** the software used to create *Compton's MultiMedia Encyclopedia,* is for publishers who want to translate existing information into an interactive, multimedia form. The package includes SmartTrieve Plus, a search and retrieval program, and SmartAPI, a programming interface. Britannica Software, 722 Genevieve, Ste. M, Solana Beach, CA 92075; 619/259-0444, 619/259-0449 (fax). List price: Licensing fees and royalties vary. *Reader service no. 614*

QUEST MULTIMEDIA AUTHORING SYSTEM is a training-manual specialist offering a choice of interfaces including on-screen prompt lines or QAL, a Pascal-like programming language that permits complex animation, data storage, and screen manipulation. The program comes with a variety of testing templates and allows you to branch a presentation depending on user responses. Allen Communication, 5225 Wiley Post Way #140, Salt Lake City, UT 84116; 800/325-7850, 801/537-7805 (fax). List price: $1795. *Reader service no. 615*

WINDOWS **SAM V AND VGA SAM FOR WINDOWS** are both aimed at educators unfamiliar with programming. They have menu-driven, plain English interfaces and come loaded with 16 testing templates. Both support response-conditional branching and let you keep student records and produce progress reports. Technology Applications Group, 1700 W. Big Beaver Rd. #265, Troy, MI 48084; 800/659-5214, 313/649-4477 (fax). List price: *SAM V* $2875, *VGA SAM for Windows* $3000. *Reader service no. 616*



IconAuthor 4.0's flowchart and icons make authoring as simple as pointing and clicking.

SANTAFE MEDIA MANAGER is a multimedia data manager based on *Paradox* that's designed especially for sales and marketing applications. For example, travel agents can show clients files on different destinations, complete with pictures and ambient sound. With the addition of the *Videographer* module, you can integrate full-motion video. HSC, 1661 Lincoln Blvd. #101, Santa Monica, CA 90404; 213/392-8441, 213/392-6015 (fax). List price: *Media Manager* $149, *Videographer* $149. *Reader service no. 617*

TENCORE PRODUCER AND TENCORE LANGUAGE AUTHORING SYSTEM help you write interactive education applications that can analyze test answers, monitor student progress, and repeat lessons when necessary. *Producer* provides icons, menus, and templates, while *LAS* offers a choice of an icon-menu interface or a powerful command language. Computer Teaching Corp., 1713 S. State St., Champaign, IL 61820; 217/352-6363, 217/352-3104 (fax). List price: *Producer* $1800; *Language Authoring System* $2400. *Reader service no. 618*

Dan Miller is the Andrew Fluegelman Intern at PC World.

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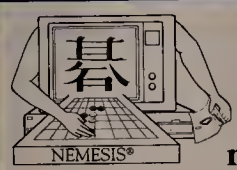

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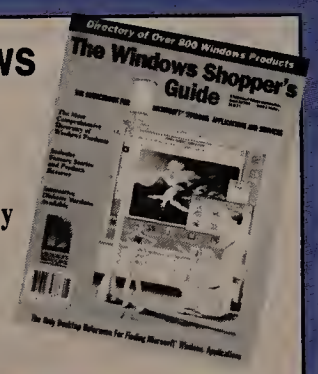

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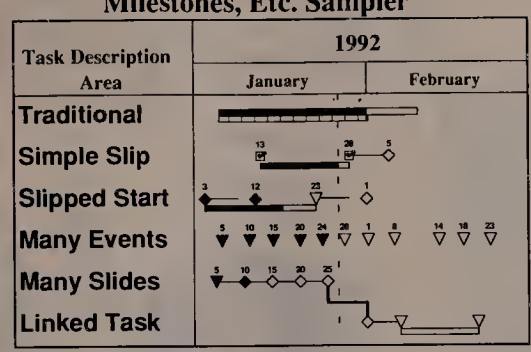

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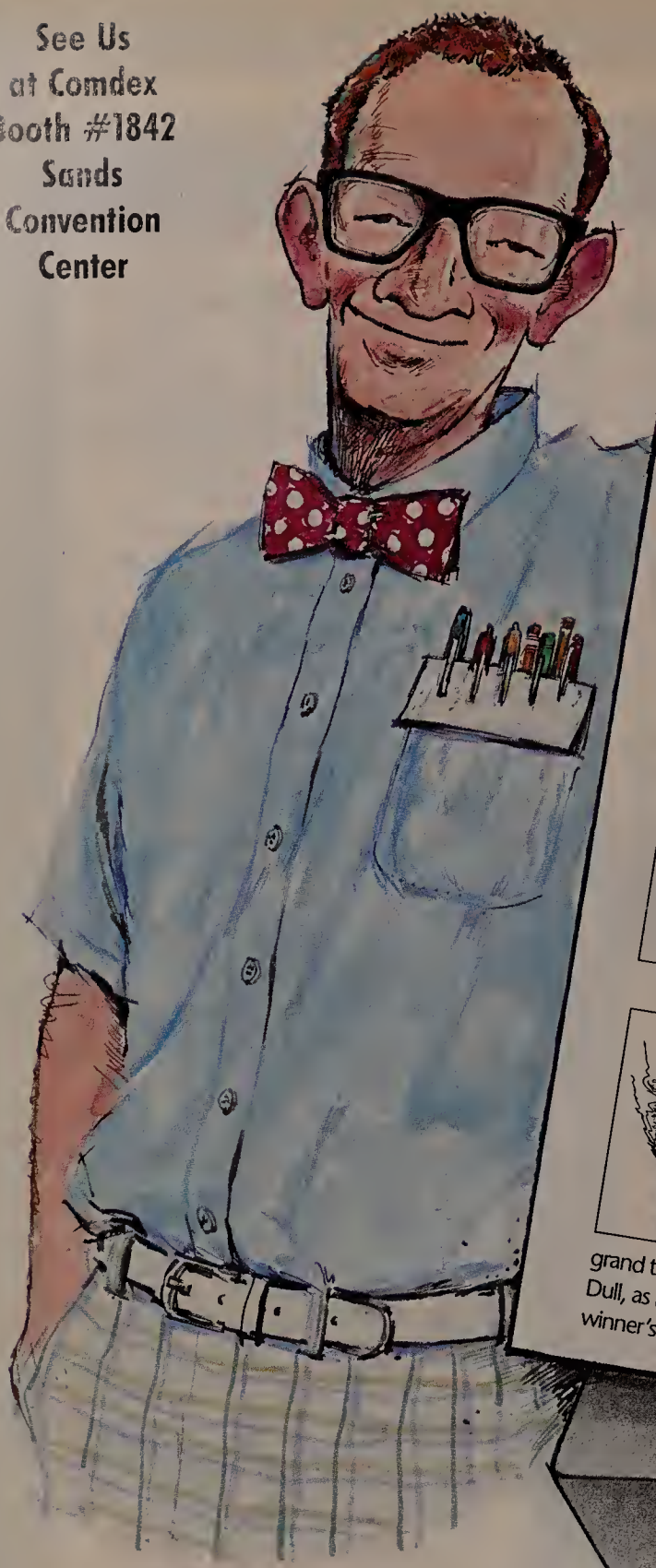

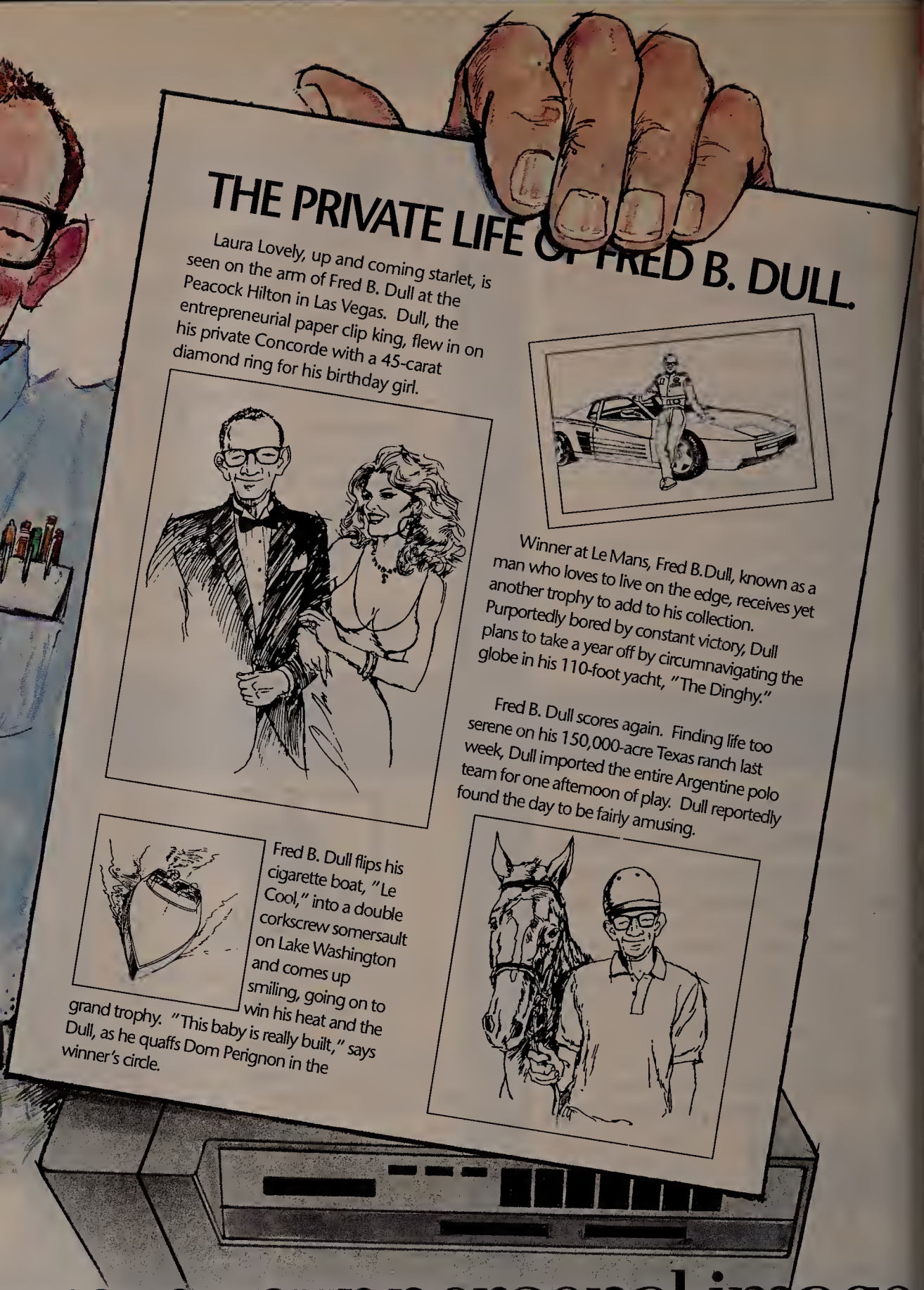

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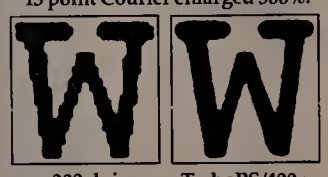

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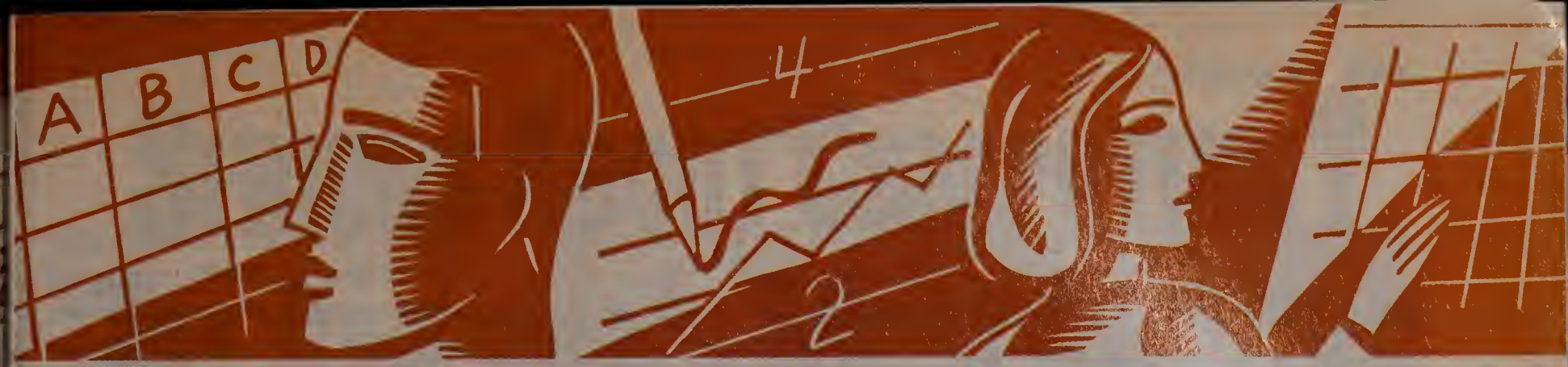

SPREADSHEETS (A..Z)

Practical tips for building better worksheets

Richard Scoville

There are two basic types of macros: those that automate repetitive operations within a particular worksheet, such as printing a report; and those that ease routine tasks common to all worksheets, like summing a column of numbers, aiding data entry, and copying. While the first type is best stored in the pertinent worksheet, it's smart to make the second group accessible from all worksheets by setting up a macro library. This column will show you how to create macro libraries in *1-2-3* releases 2.2, 2.3, and 3.*x* and in *Quattro Pro*.

A Utility Macro Potpourri

FIGURE 1 shows two simple utility macros. (As shown, they will work in *1-2-3* release 2.2 and 2.3, and in *Quattro Pro;* later, you'll learn how to modify a couple of lines for *1-2-3* release 3.) To create the macros, start with a blank worksheet and type in the macro statements (type an apostrophe before each backslash in column A). Next, put the cell pointer on cell A2, select */Range Name Labels Right* (in *Quattro,* that's */Edit Names Labels Right*), paint the range A2..A6, and press **<Enter>**. Then save the file: Select */File Save* (in *Quattro, /File Save as*), enter the name **MACLIB**, and press **<Enter>**.

The first macro, \N (cell B2), is a classic: It lets you easily enter a series of numbers into a column using the numeric keypad. Make sure NumLock is on, then start the macro by pressing **<Alt>-N**. The pause command ({?}) pauses the macro to let you type data, then resumes when you press **<Enter>**. Type a number and press **<Enter>** again; the macro moves the cell pointer down one row and enters the number you just typed. The {branch} statement restarts the macro, so you're ready to enter the next number. When you're through entering data, halt the macro: Press **<Ctrl>-<Break>**, then **<Esc>**.

The second macro is more involved. It lets you copy a formula from one cell to another without changing its cell references and without using absolute cell addresses. To run it, put the cell pointer on a formula and press **<Alt>-C**, move the cell pointer to another cell, and press **<Enter>**. Here's how it works:

B6: Places a label prefix (the apostrophe) at the beginning of the formula, converting it to a label.

B7: Stores a copy of the label in the variable cell \XV_C_1 (B4).

B8: Restores the original formula by deleting the apostrophe.

B9: Displays a message in the mode indicator asking you where the copy should go.

B10: Pauses while you move the cell pointer to the destination cell. Since you are free to begin cell entries or commands during the pause, a {break} command clears the command line before the macro continues; {indicate} clears the message from the mode indicator.

B11: Copies the formula/label from \XV_C_1 to the current cell.

B12: Converts the new cell entry back into a formula.

Creating the Library

In *Quattro Pro,* select */Tools Macro Library Yes* before you save your library worksheet. Once you've identified a file as a macro library, its macros can be executed from any open worksheet. The

	A	B
1		
2	\N	{?}{down}{branch \N}
3		
4	\XV_C_1	
5		
6	\C	{edit}{home}'~˘7E
7		{let \XV_C_1,@cellpointer("contents")}
8		{edit}{home}{del}~˘7E
9		{indicate +"Copy to where? "&@repeat(" ",80)}
10		{?}{break}{indicate}
11		{let @cellpointer("address"),\XV_C_1}
12		{edit}{home}{del}~˘7E

FIGURE 1: Enter these macros into a blank worksheet, then follow the instructions in the text to turn them into a macro library.

ANTHONY RUSSO

Excel Shortcut

Align Your Dollar Signs

Tired of financial schedules that look jagged because the dollar signs don't line up? *Excel 3.0* offers a simple method for positioning dollar signs at a fixed distance from the decimal point.

Enter a series of numbers, ranging from single digits to the millions, into an *Excel* worksheet column. Select the entire range, choose *Format Number* from the menus, and select the format *$#,##0.00_);($#,##0.00)* from the list in the dialog box. In the text box, edit the format to read $?,???,??0.00_);($?,???,??0.00) and choose *OK*. The form of your column should now resemble the following, with left parentheses and dollars signs lined up neatly on the left:

```
$  548,487.26
($1,800,478.57)
$         0.94
($   68,765.52)
```

only complication comes when a macro refers to a range name (or a cell address, though for reasons too involved to discuss here, macros should almost never refer to cell addresses). Unless told otherwise, the macro assumes that a range name refers to the macro worksheet, not to the current one. So in \C, the statement in cell B7 correctly assumes that \XV_C_1 is in the macro worksheet. If your macro needs to refer to a range name in the current sheet, precede the range name with **[]**.

In *1-2-3* release 3, a macro worksheet requires no special designation; you can execute a macro located in any open file. The rules governing range names are a bit more complex than in *Quattro:* A range name reference is assumed to be in the current (cell pointer) file, unless the reference is to a {branch} or subroutine location, in which case the range is assumed to be in the macro worksheet. We need to modify our \C macro to trick *1-2-3* into looking for the range \XV_C_1 in the macro sheet instead of in the current sheet. The fix is to precede the range name with a question mark wild-card file notation. For instance, B7 would read {let <<?>> \XV_C_1,@cellpointer("contents")}.

Since the macro will search all open files to find the range name, it's important to give your macro library ranges distinctive names. I use the \X prefix: \XV_C_1 denotes the first variable for the library macro \C.

In *1-2-3* release 2.2 and 2.3, you need to use the macro manager add-in. First, attach it: Select */Add-in Attach* and choose *MACROMGR.ADN.* Then assign the add-in to a function key (I use <F10>), and *Quit* back to Ready mode.

Once you've created your macro worksheet, as shown in **FIGURE 1**, put the cell pointer in A1 and press **<Alt>-<F10>**. Select *Save,* enter a file name for your macro library, paint a range that covers all your macro statements and documentation (in the figure, A1..B12), and press **<Enter>**. Select *No* to forgo password protection, and your macros disappear into the macro library. Your library macros are ready to run. (Next time you start *1-2-3,* attach the macro manager: Press **<Alt>-<F10>**, select *Load,* and choose your macro library file.) The rules governing range names in *2.2* and *2.3* are simple: *1-2-3* looks first in the worksheet, then in the library. Just take care not to use the same range names in worksheets as in your library, and you won't run into any trouble.

Questionable Spreadsheets Department

Q. *Every week I log several budget figures by filling out another row in a template. Can I write a formula that will automatically display the total for the most recent weekly entries?*

Bill Simmons
Orangeburg, South Carolina

A. Here's a solution that works in *1-2-3, Quattro,* and *Excel.* On page 269

Spreadsheet Toolbox

The Art of the 1-2-3 Macro

If you're not sure exactly what to put into your macro library, pick up a copy of Michael Lunsford's *Macros, Menus, and Miracles for Lotus 1-2-3,* a treasure trove of inspiration for macro maniacs. The book starts with "What Is a Macro" and works in simple steps up to sophisticated examples for printer control, data bases, a checkbook register application, even a macro to turn *1-2-3* into a primitive word processor. Along the way, you'll get sound advice on range names and macro variables and lots of other useful tips.

Macros, Menus, and Miracles for Lotus 1-2-3 $25; John Wiley & Sons, One Wiley Dr., Somerset, NJ 08875
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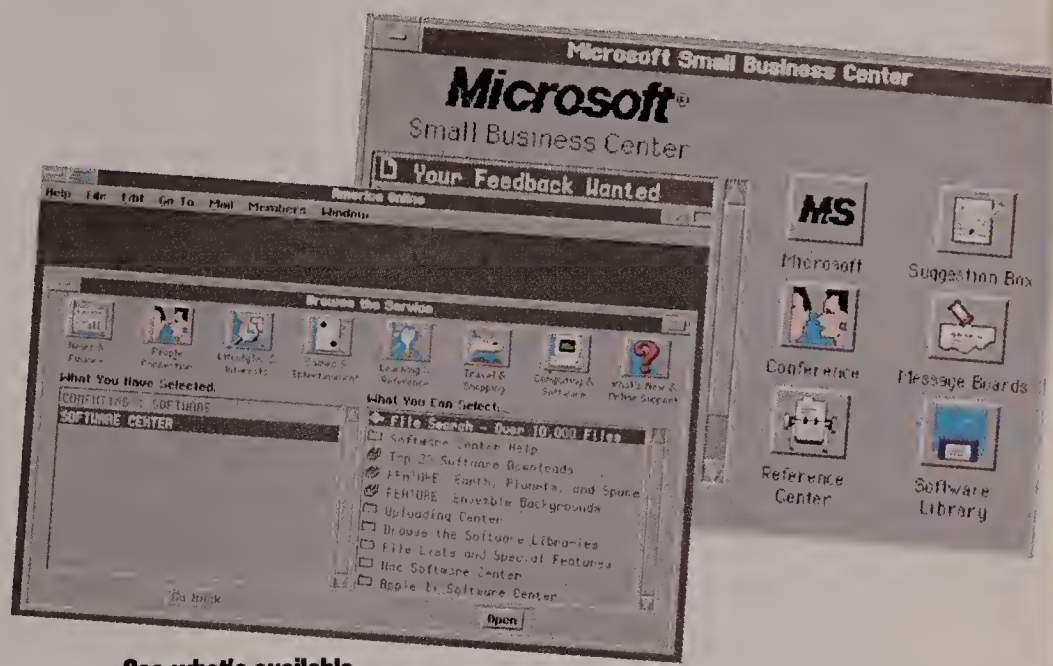

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is a simplified version of the spreadsheet you submitted. The weekly data is shown in columns B, C, and D; the sums in column E. For instance, cell E4 contains the formula @SUM(B4..D4).

The @index() function in E1 extracts a value from a table, given its row and column position. In this case, the table is the column of sums E4..E13. The column position is 0 (the first column or row in the table is number 0). The row position is calculated with an @count() function that counts the number of values in the data range B4..D13. When divided by 3, that value is the number of filled rows in the data range. The @int() function trims the decimals, and subtracting 1 yields the correct row number.

Note that the formula requires an entire row of values to be filled in before it considers that row to be current. Unlike other common solutions to this problem, this approach doesn't require a column of intermediate formulas and works even when one of the sums is zero.

	A	B	C	D	E
1				Last Sum:	107
2					
3	WEEK	X	Y	Z	SUM
4	1	43	29	0	72
5	2	32	14	47	93
6	3	90	28	96	214
7	4	8	25	34	67
8	5	11	76	46	133
9	6	18	21	24	63
10	7	70	13	24	107
11	8				0
12	9				0

In cell E1 enter the formula @INDEX(E4..E13,0,(@INT(@COUNT(B4..D13)/3))-1).

Send your spreadsheet questions to Richard Scoville, CompuServe 72341,2727; MCI Mail 357-4517; 415/442-1891 (fax); or mail them to Spreadsheets (A..Z), PC World, *501 Second St. #600, San Francisco, CA 94107.* PC World *pays $50 for published questions. Sorry, we cannot acknowledge submitted materials.*

Richard Scoville is a contributing editor for PC World.

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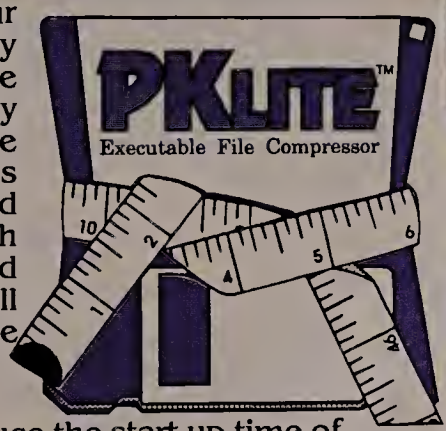

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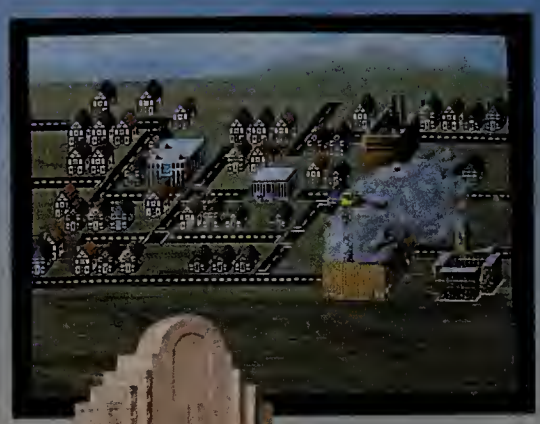

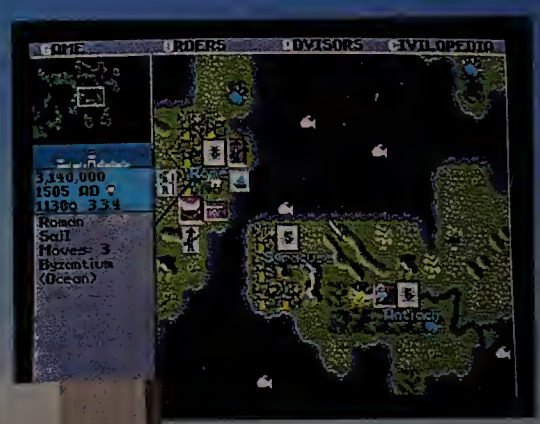

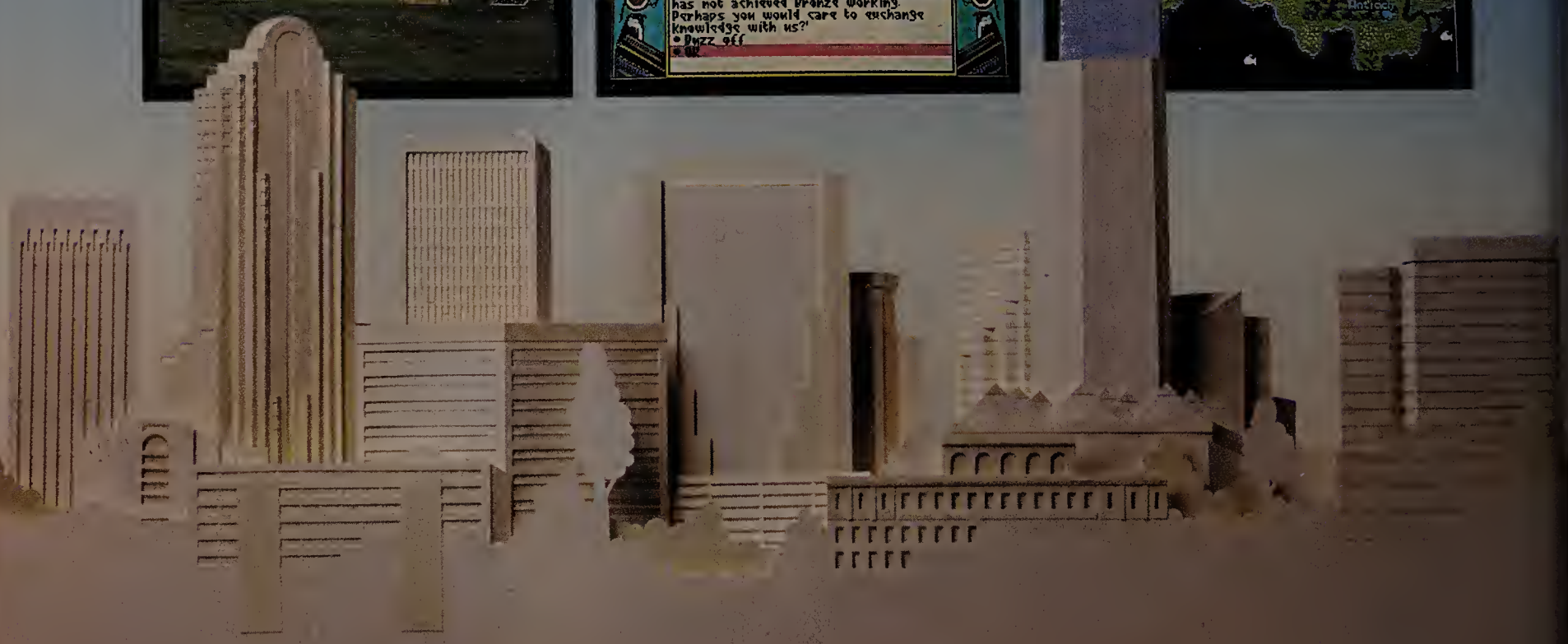

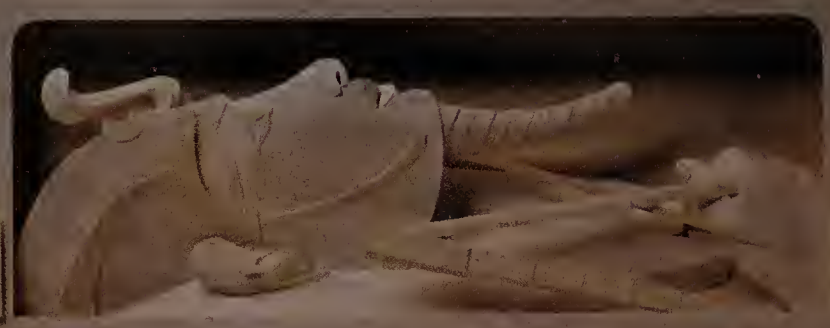

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WORD PROCESSING CLINIC

Tips for getting the most out of your word processor

George Campbell

Q. *I liked the way* WordPerfect 4.2 *showed me my line number at the bottom of the screen. But now I use version 5.1, and I'm seeing a measurement in inches instead. How do I get my line numbers back? —Kirsten Yetter, Bakersfield, California*

A. I agree; WordPerfect should have left well enough alone. To see line numbers instead of *WordPerfect 5.1*'s default measurement, just press **<Shift>-<F1>EUSU<F7>**. As you'll see when you issue these commands, you have other measurement choices, including inches, centimeters, and points. Version 5.0 users can switch over to a line number display simply by pressing **<Shift>-<F1>USU<F7>**.

Q. *My printer can print the fractions ½ and ¼, but I can't figure out how to get those characters into my* WordPerfect 5.1 *documents. Any hints? —Alan Johnson, Boston, Massachusetts*

A. *WordPerfect*'s little-known Compose command is the solution to your fraction problem. To insert the fraction ½ at your cursor location, press **<Ctrl>-V/2**. For ¼, press **<Ctrl>-V/4**, and so on. That's all there is to it.

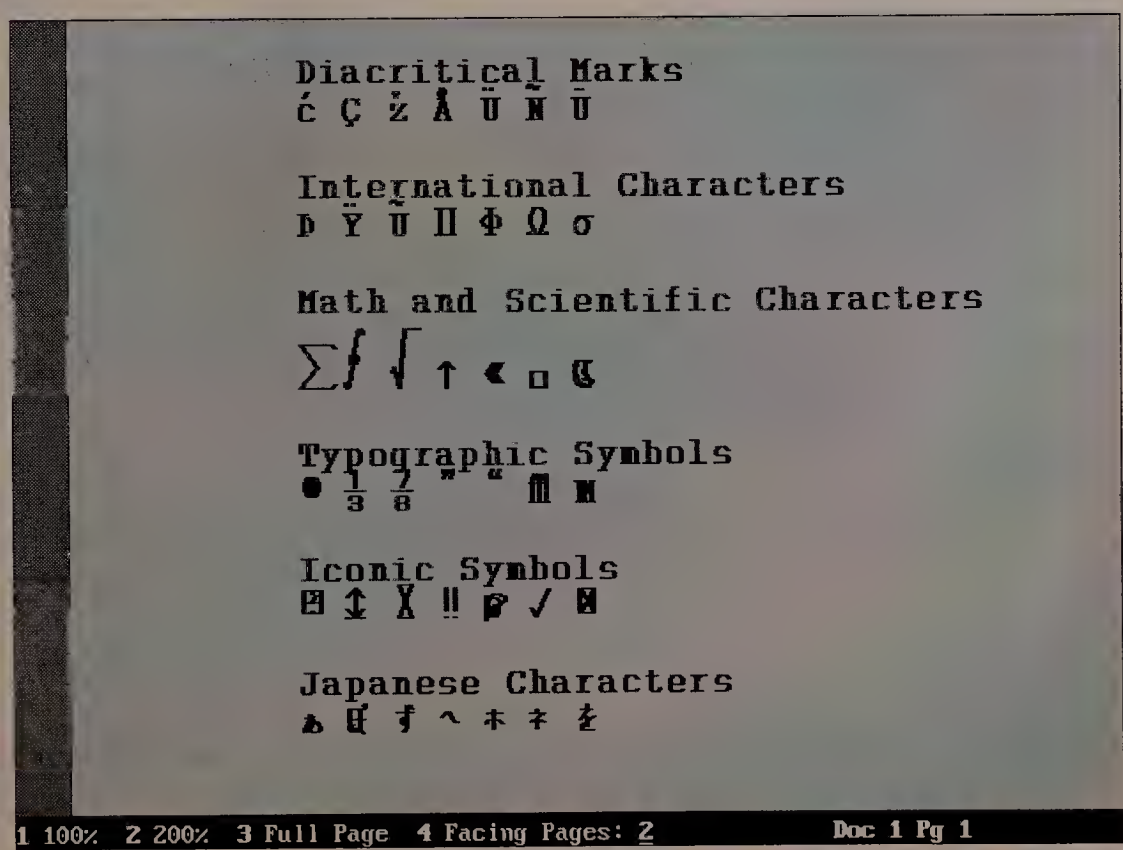
You can use the Compose command to generate foreign, mathematical, or scientific characters, as well as digraphs, or combinations of letters. For example, to produce the character ç, press **<Ctrl>-VC,**. (You'll find a complete list of marks in the Compose section of your manual.)

If your printer can handle graphics, *WordPerfect* provides up to 1500 special characters, including a myriad of foreign-language, box drawing, typographic, icon, math, and scientific symbols. (You'll find a complete list in Appendix P of your manual.) To insert any of these characters, press **<Ctrl>-V**, type the number of the character set, a comma, the number of the character you want, then press **<Enter>**.

If you insert a special character that's not available in the IBM character set, you'll see a solid box on the screen. To view your characters as they will print, press **<Shift>-<F7>V** for a page preview. You can also view some additional characters on EGA, Hercules, and VGA screens by selecting a 512-character display with this command: **<Shift>-<F1>DC5<F7>**.

A couple of caveats: Your printer must be capable of printing graphics for Compose to work. Also, if you choose a character that isn't in an internal printer font, *WordPerfect* prints the character in its own font, so what you see may not be what you get. Finally, the <Ctrl>-V command, which prompts you for the characters, works only in the normal editing screen. If you're working with tables or other special editing screens, use the promptless <Ctrl>-2 Compose command instead.

By the way, *WordPerfect 5.0* users have many of the same capabilities. See



Using a flexible, yet little-known WordPerfect command called Compose, you can include foreign, scientific, and other special characters in your documents.

ANTHONY RUSSO

the Compose section of your manual and the listing of characters in the Appendix.

Q. *I like using* Word for Windows, *but I think its default 10-point Times Roman font is far too small. I know I can change the font in each new document, but is there a way that I can change the default font? —George Williams, Salem, Oregon*

A. No problem. *Word for Windows* uses templates to control the defaults for documents. Change the template, and you change the defaults. When you start *Winword*, it loads the template NORMAL.DOT. Here's how to change the start-up font:

1. Start *Winword*, then load the NORMAL.DOT template using the *File Open* command.
2. Select *Format Define Styles.*
3. In the dialog box that appears, click the *Character* button, select your new default font and size in the list boxes, and click the *OK* button.
4. To make the changes permanent, select *File Save.* From now on, *Word for Windows* will start with the default font you selected.

As you're looking at the Define Styles dialog box, notice that you can alter many other document characteristics. By changing features such as margins, tabs, columns, and other items in NORMAL.DOT, you can customize your start-up document.

Q. *I often need to save a block of text to a new file. Is there a way to do that in* Word 5.0? *—Eric Samuels, Oakland, California*

A. While no version of *Word* includes this function, you're not left out in the cold. The installed MACRO.GLY glossary file lets you save the text block to a new file, but first you must merge the glossary into the default glossary file.

To do this in *Word 5.0,* press **<Esc>TGM**, type your *Word* directory's drive and path, followed by **\MACRO.GLY**, then press **<Enter>**. You can make the macro permanent just by pressing **<Esc>TGS<Enter>**. To save a highlighted block of text, press **<Ctrl>-SS**, type a file name, and press **<Enter>**.

Macro glossaries provide other useful macros. You'll find a complete description of them in the macro section of your *Word* manual.

Send your word processing questions to George Campbell, CompuServe 71571,222; MCI Mail GCAMPBELL; 415/442-1891 (fax); or mail them to Word Processing Clinic, PC World *501 Second St. #600, San Francisco, CA 94107.* PC World *pays $50 for published questions. Sorry, we cannot acknowledge submitted materials.*

George Campbell is a contributing editor for PC World.

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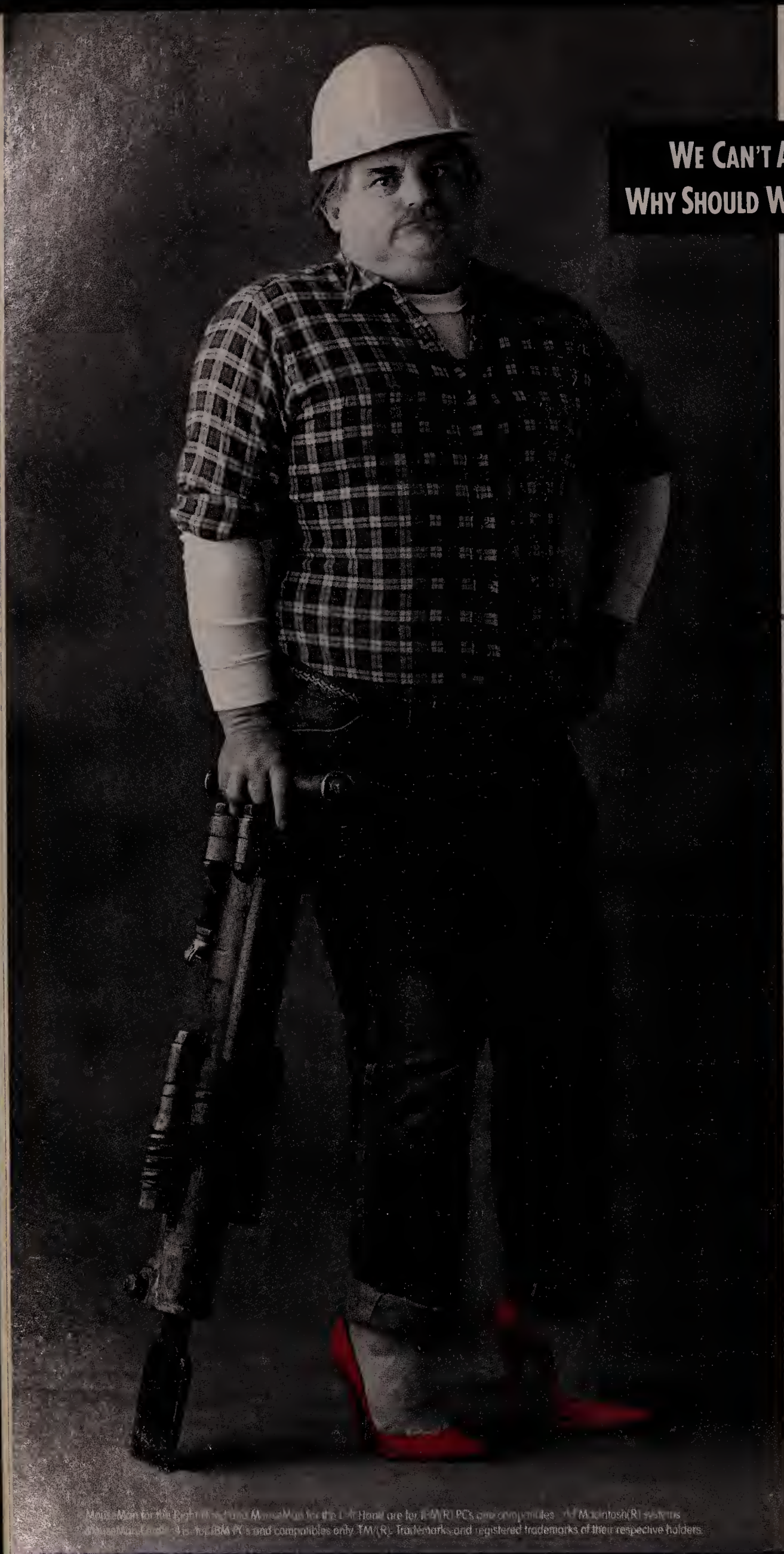

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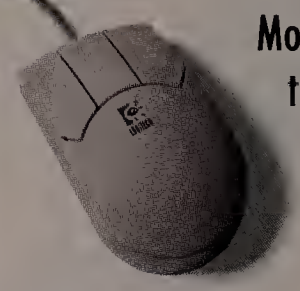

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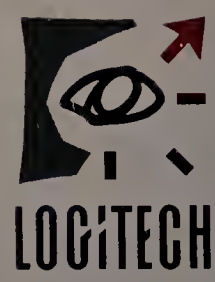

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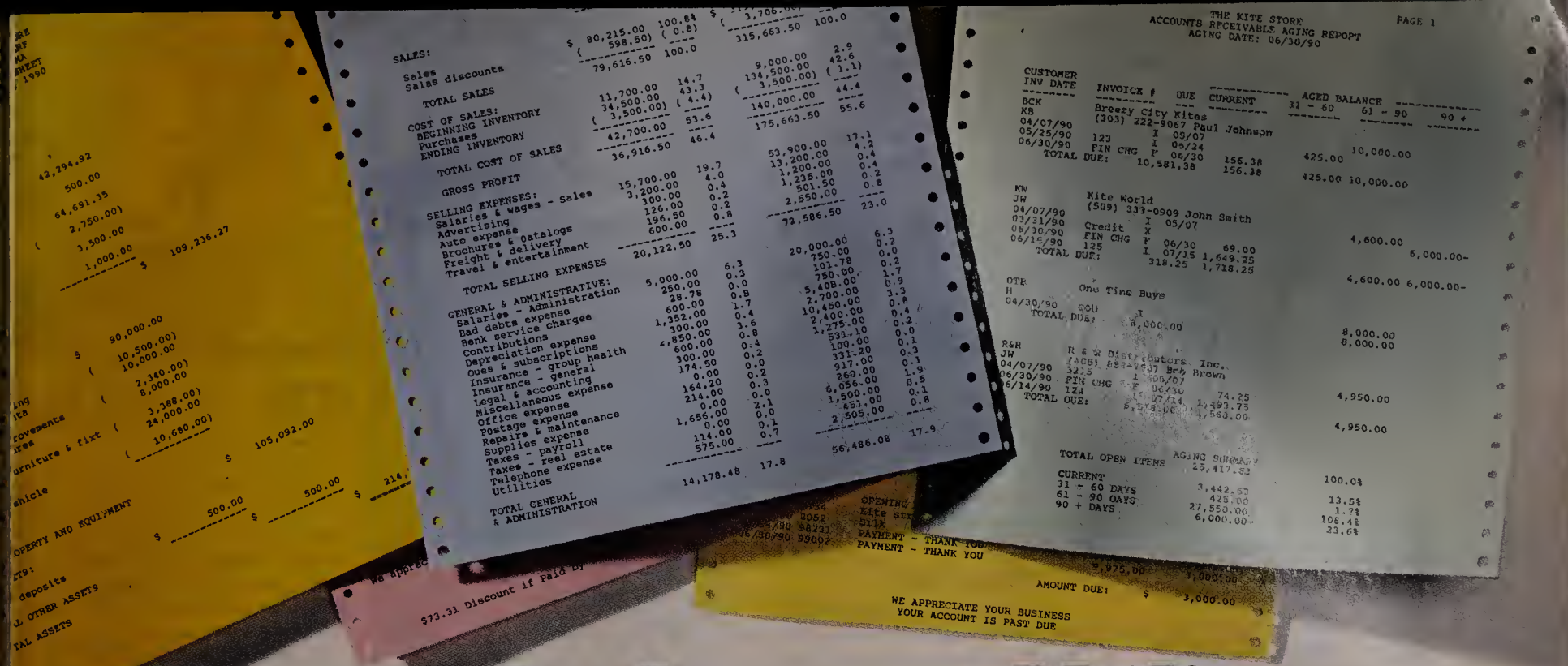

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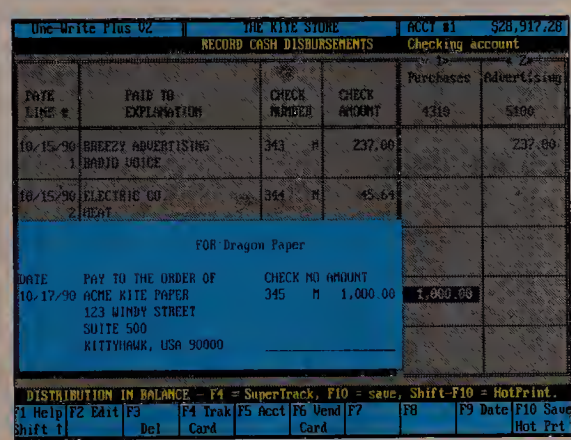

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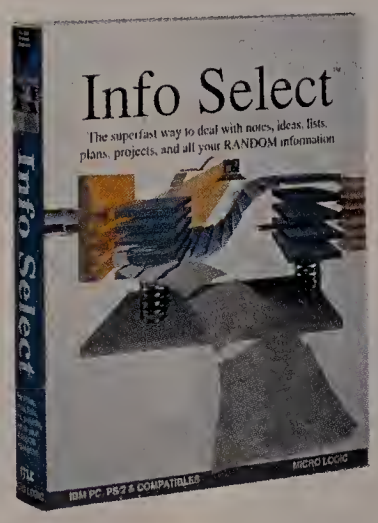

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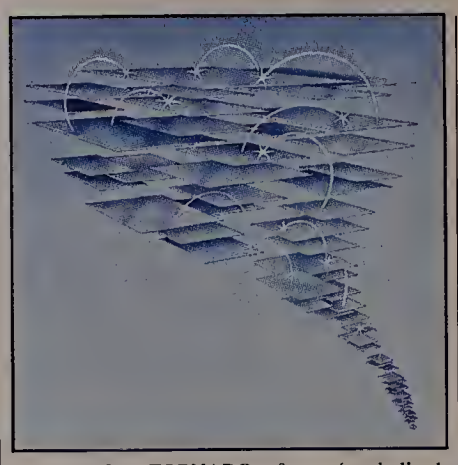

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Info Select allows you to: add columns of numbers; store data in EMS; use template or free-form windows; import and export files, screens, and databases; move, join, and duplicate windows and much more.

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The new LAN version allows integrated E-mail, sharing company rolodexes and distributing company policies. You can share any kind of information. It's your first step into the exciting new world of groupware! Ask about the five node LAN starter pack.

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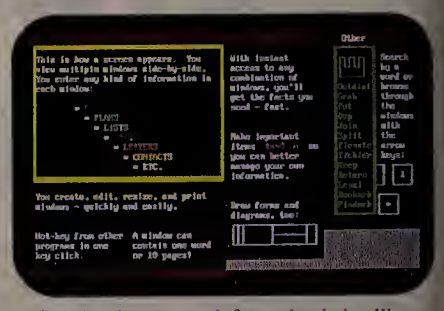

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DATA BASICS

Tips and techniques for managing your data

Steve Cummings

Q. *Can I change the way* dBASE IV *displays currency values? I'm gathering data on our overseas operations and want to print reports showing expenses in pounds sterling with European currency formatting, like this: 2.325,43£.*

Seymour Plantagenet
Salt Lake City, Utah

A. You can globally change the way currency is displayed with the DBSETUP program, which was placed on your hard disk when you installed *dBASE*. First, at the DOS prompt, type **COPY CONFIG.DB CONFIGDB.BAK** and press **<Enter>** to save a backup copy of your CONFIG.DB file before changing it. Then run DBSETUP.

From the opening menu, select *Config.db Modify existing config.db*. At the next set of menus, select *General Currency*. To switch from the dollar sign to the pound symbol, choose *Symbol*, then press **<Space>**. Now hold down the **<Alt>** key while you type **156** on the numeric keypad. When you release <Alt>, you'll see the pound symbol. Press **<Enter>** to save the symbol. To move the pound symbol to the right of the numerals, select *Justification Right*, then press **<Ctrl>-<End>** to return to the General menu.

Now it's time to switch the decimal point and the thousands-separating comma. As with the currency format, you make these changes from the General menu. This menu is much longer than what appears on the screen at first, and you get to its lower options by scrolling or by pressing the first letter of your option. To change the decimal character, select *Point* by pressing **P<Cursor Down><Enter>**, then type in a comma and press **<Enter>**. To change the separator, select *Separator*, type a period, and press **<Enter>**. When you've adjusted the currency format to your liking, select *Exit Save and exit* to create a new CONFIG.DB file.

When you next enter *dBASE*, the program will have an old-world flavor. If, when you design a report, you set the numeric field template as **999,999.99** and turn the Financial Picture function on (don't worry about the dollar sign on screen), the report will print in the European style.

Q. *Our firm is using* DataEase *to assemble a master data base of past and prospective customers. With the names coming from several sources, there's bound to be some overlap. How can we ensure that we don't enter a customer name more than once?*

Ned Langely
San Mateo, California

A. What you need is a way for *DataEase* to warn you if two customers have identical last names. You may be

```
J:\DEASE\namechek.DBI
1: ADD NON-MATCHING 2: UPDATE MATCHING 3: ADD OR UPDATE 4: DO NOT MATCH
     D A T A E A S E  -  D A T A   I M P O R T   F A C I L I T Y

Please select the destination form name :
        Customers/Contacts

Please enter the source data file name :
        CUSTBAAB.DBM
What is the data file format ? :                    DATAEASE
Is the source form same as the destination form ?   yes

Processing can be based on MATCH between existing and new records.
Ho                                                  Page 2:5-13
   DataEase can match the records being imported to the existing records
   in the destination form by matching the Unique fields.
   Select 1. ADD NON-MATCHING if importing only new records.
          2. UPDATE MATCHING if updating existing records.
          3. ADD OR UPDATE if importing new and updating existing records.
          4. DO NOT MATCH saves time if you are importing only new records,
                          and you are sure that the import file does not
                          contain duplicate records.
   Alt-F1 Exit = F1 More Help = Ctrl-F1 On  Auto Help

F4 CMDHELP ESC EXIT J:\DEASE\          Customers.        11/29/91   7 32 am
```

To ensure that you import only records with unique last names, choose the Add Non-Matching option at the last prompt on the import screen. DataEase's pop-up help window can guide you through the process.

ANTHONY RUSSO

Reader Tips

Pulling Statistics From dBASE IV

Need a quick breakdown of the number of purchases made by individual customers, the number of customers in various cities, or the number of people in your marketing survey who preferred particular fragrances? To group and count the records in your data base, use a *dBASE IV* query with two summary functions: Group By and Count.

With the data base open, select *Queries create*. In the file skeleton, type **group by** in the field that interests you. For instance, if you just completed that marketing survey, you'd enter **group by** in the Fragrance field.

You'll probably want to see the query results in order of size with the largest group first. With the cursor still in your "group by" field, press <F10> and select *Fields Sort on this field Descending*.

The Count function needs a specific field to count. Type the word **count** in another field in the file skeleton; it doesn't matter which field you choose, as long as it's one that's never empty. Once you've done this, simply press <F2> to execute the query.

Mitchell Johns
Denver, Colorado

tempted to validate the Last Name field as *Unique*, which will prevent you from entering a last name that's identical to the field's contents in another record. But that's not really a good idea. Because you can't override this validation criterion, you'd be stuck if Alice and Betty Chi are both customers.

Here's a work-around: Using the Define a Form command, make a second form with the same structure as your Customer form, but with no data. Call this second form **Custchek**. You can press **<F5>** and select the *Form* option to copy the structure of the Customer form to the Custchek form.

Next, set the new form's Last Name field to *Unique:*

1. Select *View or modify a form.*
2. Move the cursor to the correct field and press **<F10>** to display the Field Definition Screen.
3. Move the cursor to the Unique field and select *Yes.*

Finally, import your data from the Customer form to the Custchek one:

1. Move to the *Utilities* menu and select *Import.*
2. Choose the *Define an import* option.
3. Type **Customer** and press **<Enter>**.
4. When you're asked if the two forms have the same structure, select *Yes.*
5. You will be prompted to tell *DataEase* how matching records should be processed. Select *Add non-matching.*
6. Press **<F2>** to save your new import definition.
7. To run the import, pick *Run Defined Import* from the Import menu and choose your import definition from the list displayed.

DataEase won't import a record with a last name that matches an earlier one, but such records aren't ignored. They're listed in a special Exception file, which we've named CUSTCHEK.E01 in this example. With a copy of this list in hand, you can easily go back to the original data file and examine the records with matching last names, deciding which ones are duplicates and which are just similar ones.

Q. *I keep an inventory data base in* Paradox, *and I need to see several fields in Table View. To squeeze as many fields on screen as possible, I've allotted only a three-space column to the Qty field. That's usually sufficient, but when there are 1000 units or more of an item in stock,* Paradox *displays a series of asterisks instead of the number. Is there a way I can quickly see the actual values in these fields without resizing the column?*

Frank James
Salem, Oregon

A. When you've narrowed a Table View column so much that all the data doesn't fit, use Field View to see the entire field. Place the cursor on the field in the record you wish to examine and press **<Alt>-<F5>**. The cursor will become a white rectangle, and you'll be able to scroll left and right to see the contents of the entire field.

This trick is a side benefit of Field View's, by the way, not the primary purpose for which it was designed. Field View is built for the job of editing a single field at a time, and it's very easy to use for this. In Field View, the <Home>, <End>, <Cursor Left>, and <Cursor Right> keys move the cursor within the field, instead of from record to record or field to field, and the <Delete> key deletes individual characters, rather than entire records. If you're not already using Field View for editing data, whether it fits in its column or not, it might be a good idea to start now.

Send your questions to Data Basics, PC World, *501 Second St. #600, San Francisco, CA 94107; CompuServe 74055,412; MCI Mail 179-3813; 415/442-1891 (fax).* PC World *pays $50 for published questions. Sorry, we cannot acknowledge submitted materials.*

Steve Cummings is the author of Understanding Quicken *(Sybex, Alameda, California, 1990) and a* PC World *contributing editor.*

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PC Magazine, June 25, 1991

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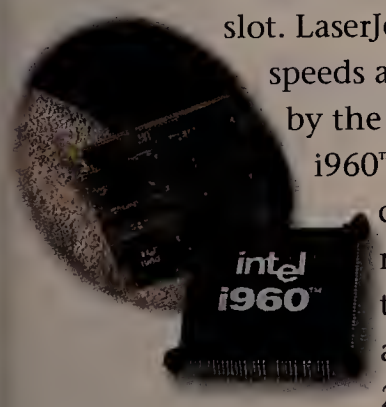

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PostScript file output from Apple LaserWriter IINTX

PostScript file output from LaserJet III with PacificPage XL

"PacificPage XL swiftly and accurately renders some test EPS files that other interpreters distort and had no trouble with any of the large and complex images used for testing."

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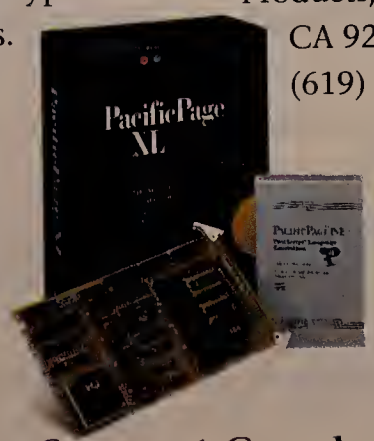

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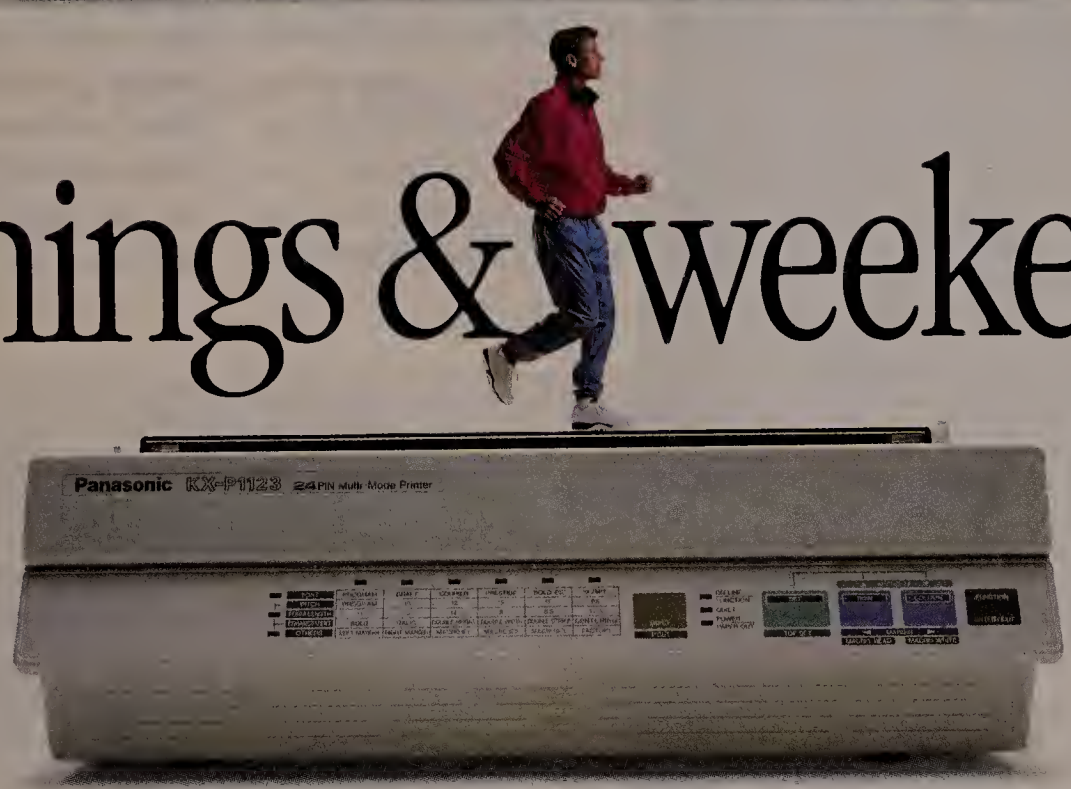

Printers for people who want to look as good at home as they do in the office.

When you put your ideas on paper, they have to make a great impression. And that's a given, with either of these two new Panasonic® printers. Because both offer the impressive value and performance you'd expect from the people who make the industry's best-selling 24-pin printer.*

The KX-P1124i, the office model, gives you 11 built-in fonts, including Super Letter Quality for an exceptionally professional appearance. You also get the versatility of bottom, front and rear paper paths. 300 cps draft speed. And a new LCD display on the EZ™ Set control panel that takes "user friendly" to a new level. For the price, there isn't another printer on the market that even comes close.

The KX-P1123 brings home nearly the same capabilities, at a price that's even more affordable. It has 7 fonts, three paper paths, EZ Set front panel, and 240 cps draft speed. Plus a new automatic microline feed that makes paper loading a cinch.

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PUBLISHING & PRESENTATIONS

Expert advice for creating high-impact documents and presentations

Richard Jantz

It's not enough anymore to get your documents done accurately and on time—they also have to look good. The challenge in designing a business document or presentation is to make the material visually appealing without undercutting the serious nature of its contents. To give you some ideas to work with, each month *Publishing & Presentations* will show a "make-over"—a redesign of an actual publication or presentation submitted by a reader.

This month's make-over is based on a quarterly report submitted by a business research center. Because it publishes confidential information, we fictionalized the sample document's contents.

Spicing up the *Quarterly Report* demanded a mastery of understatement. Unlike image-building company newsletters filled with graphics, photos, and short articles, an all-business report such as this contains only text and data charts. Not much to work with, but we didn't let that stop us. We used *Ventura Publisher* for our document, but other desktop publishers and high-end word processors can also do the job.

Before

THE CENTER FOR URBAN ECONOMICS

Quarterly Report

1991
Fall

The Center for Urban Economics
Xavier Foundation

AN UPDATE ON CALIFORNIA'S RETAIL TRADE AND RETAIL SPACE

Throughout the United States, the pattern of retail space development has changed significantly over the past decade. Of the total dollars spent on commercial building, a smaller share is now spent on projects devoted solely to retail space. Space in shopping centers continues to increase, while other forms of commercial development, such as hotels and office space, are attracting more builders.

These factors reflect a combination of national trends in the retail development business. First, employment in other sectors of the economy related to commercial building is growing faster than employment in the retail trade. Second, office buildings and hotels are taking an increasing share of commercial building dollars, and this often includes a mixed use of the retail space component. Third, a far less extensive approach to retail space construction is reflected by new building patterns, with a concentration on renewal and expansion of existing space and on infill in urban areas.

California's retail sector is one that strongly reflects these broad national trends. This report uses California as a model for looking at patterns of retail sales growth and investment in retail space from 1979 to 1990.

Retail Employment and Sales Trends

California's retail sector is responsible for approximately 16 percent of all wage and salary income in the state. This share has remained relatively stable throughout the past decade. Today, 16 percent of California workers are employed in the retail sector, which is only a percentage point lower than 1980. Over the same ten-year period, employment in finance, insurance, and real estate grew from 30 to 35 percent of the state's work force.

In the past decade, retail sales have been cyclical, while the share of retail trade in the economy has changed little. Between 1979 and 1988, California's real (inflation adjusted) sales increased by over 30 percent, while population grew by 15 percent and real personal income increased by 29 percent.

During the remainder of the 1980s, population continued to grow, but a high rate of unemployment and slower rate of income increase led to a decline in real retail sales. While taxable retail sales reached over 180 billion dollars in 1988, a 30 percent real increase over 1980 sales, retail activity decreased in 1989 and 1990.

Changing Patterns of Sales

As in the past, purchasing patterns and the rate of growth vary by the type of retail good, which leads to changing patterns of retail space investment. For example, specialty stores are growing faster than retail outlets, such as apparel and department stores, that played a major role in shopping center expansion in the past. The two fastest growing sectors in the

(continued on page 2)

California Taxable Retail Sales
1979-1990

After

The bar graph in the original nameplate is overbearing and gratuitous. A simplified version, using a bolder italic typeface (Helvetica Black Italic instead of Helvetica) set against a less imposing grid, is more congenial and easier to read.

Part of the original headline becomes a kicker—a brief labe above the headline. We separated this one with a rule and set it in capital letters to contrast with the headline.

To add graphic emphasis to the first paragraph of body text, an initial cap (an enlarged capital letter) is set in a contrasting typeface, in this case Helvetica Bold Italic.

Contrasting typefaces for headings and body text help cure the original document's gray-page syndrome. Helvetica (the original typeface) is a good choice for headlines, subheads, and figure titles, but we changed the body text to Times Roman, which is more readable in smaller sizes.

ANTHONY RUSSO

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Like many business documents, the *Quarterly Report* suffers from the gray-page syndrome: too much information crammed into too little space, resulting in a dull, low-contrast "gray" tone. To correct the problem, we increased contrast by using different type styles for headings and body text. We added white space by changing from a two-column to a three-column format and by setting the body text ragged right instead of justified.

Finally, we redesigned the document's important *nameplate*, or banner, which contains the publication name, logo, and issue date, and which sets the publication's tone and style. For the *Quarterly Report* nameplate, we took a less-is-more approach, simplifying for faster recognition. The heavier typeface also provides a better contrast against the larger grid background.

After turning the *Quarterly Report* around, we're ready for any make-over that comes our way. Next!

Send your publishing and presentations questions, as well as business document and presentation make-over candidates to Richard Jantz, MCI Mail RJANTZ; 415/442-1891 (fax); or mail them to Publishing & Presentations, PC World, *501 Second St. #600, San Francisco, CA 94107.* PC World *pays $50 for published questions. Sorry, we cannot acknowledge submitted materials.*

Contributing editor Richard Jantz is author of Ventura Publisher 4.0 for Windows *(John Wiley & Sons, New York, 1991)*

Quarterly Report

Fall 1991 The Center for Urban Economics Xavier Foundation

UPDATE:

California's Retail Trade and Retail Space

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(continued on page 2)

Using reversed type (white letters on a black background) for the date of the issue and name of the publisher make them pop out so they're easier to read and recognize.

Reducing the size of the nameplate and reworking the headline to fit on a single line creates more white space and makes the newsletter appear less crowded.

To help subheads stand out, we set them larger than the body text (14 points as compared with 10) in a contrasting type style. A thin rule also helps distinguish them.

A three-column format adds an alley of white space and makes it easier to enlarge the chart. With the extra space, we can afford to place the chart inside a gray screen (an area printed lighter than 100 percent black). A background shadow further separates it from the text.

We refined the refinements, improved — and bettered the best-selling

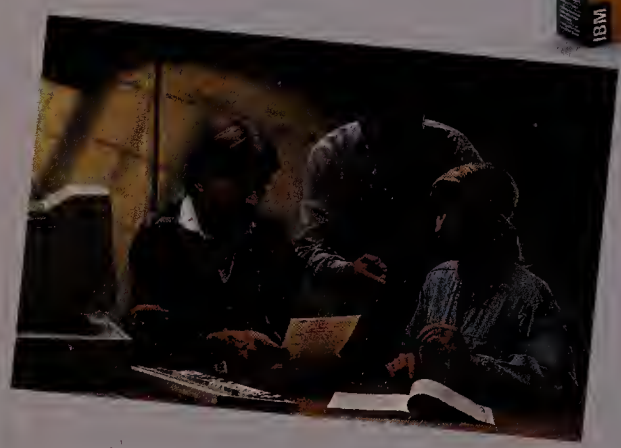
Introducing new Quicken 5.0.

Introducing two new Quickens. One adds over 50 new features for more power and convenience than ever. The other adds the advantages of Windows to the world's most popular financial software.

Why friends tell friends about Quicken. More people buy Quicken because of word-of-mouth recommendations than any other reason.

We think it's because we're obsessed with listening and responding to our customers. We never stop looking for ways to improve the improvements.

From watching PC rookies use Quicken, we developed our patented, automatic check alignment system. And we discovered ways to make our menus more accessible.

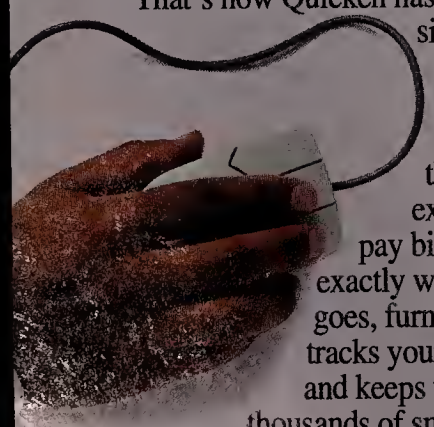


Follow-Me-Home research: Intuit engineers visit new buyers to study their first session with Quicken. As a result, we've introduced a new step-by-step guide for those who want help getting started.

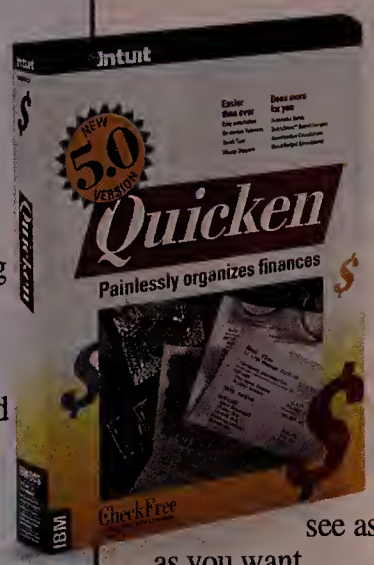
Each year we survey 10,000 users to learn how they'd change Quicken. These surveys led to Quicken 5.0's advances in report flexibility and automatic budgeting.

With Quicken, you have the culmination of years of refinements...and a future of relentless improvements.

That's how Quicken has grown – from a simple checkbook manager into a powerful financial tool that categorizes expenses as you pay bills, reports exactly where your money goes, furnishes tax reports, tracks your investments, and keeps the books for thousands of small businesses – all with the intuitive simplicity and speed of the original.



Mouse support was the top request in Customer Suggestion cards. It's in both new versions.

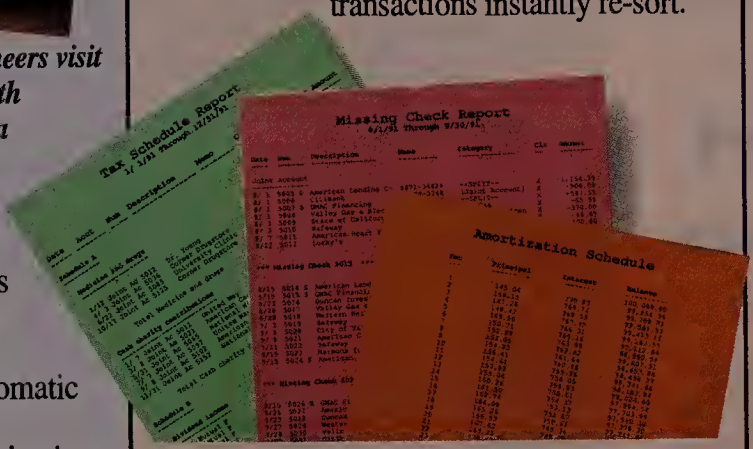


Name just about anything you like about Quicken, and we'll tell you how it's more powerful, more flexible, faster, and even easier now.

New reports and flexible reporting features. Now you can collapse or expand reports "outline-style" to see as much or as little detail as you want.

A keystroke or a mouse click lets you "zoom in" on a number to see the details behind it, then zoom in even closer — to the transactions behind the detail.

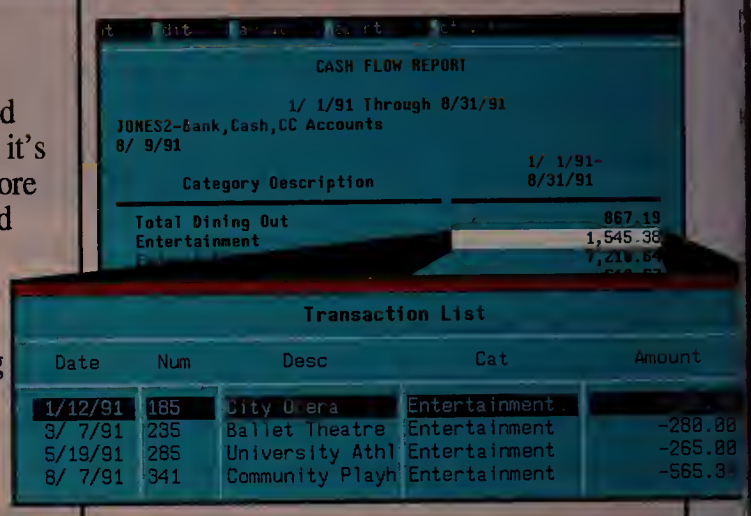
You can even reformat a report while you look at it. So, for example, to see transactions by payee instead of by date, you just choose among formats on the new pull-down menus. No need to leave the report — the transactions instantly re-sort.



New reports show interest and principal for each house loan... reveal missing checks at a glance ... provide tax schedules ready to submit with your returns, and more.

New budgeting power. We've made the hardest part — creating a budget — simple and fast. You can copy one month's budget to all other months or let Quicken automatically create a budget for you based on your actual spending, and tweak it from there.

We've made budgeting more precise, too, with subcategories. Under "Automobile" for example, you can allocate separate amounts for gas and maintenance. You can also budget a yearly amount for a category and let Quicken allocate it quarterly or monthly.



Ever question a number in a report? One keystroke, and a new QuickZoom screen pops up with the supporting details. Need more detail? Tap that key again to zoom in on any transaction.

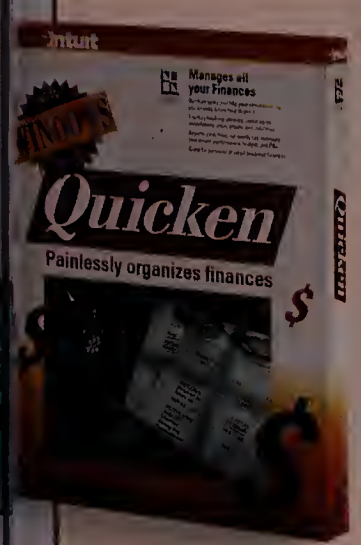
New tax information. New Loan Amortization calculates the interest and principal automatically each time you make a house payment and correctly categorizes each. And now Quicken automatically transfers data to the right lines in the right schedules of leading tax programs.

Plus much more! Edit memorized transactions ... make memorized % splits... find specific items by typing in just a few characters ... try user-defined QuickKeys ... get wallet-size laser checks ... and that's just a taste — in new Quicken 5.0 you'll discover one pleasant surprise after another.

Simply select the new AutoCreate command from the new pull-down menu and Quicken automatically fills in your budget based on last year's spending. Now play "what-if" until you see the results you want, and you've got a detailed plan to meet your financial goals.

ne improvements, advanced the advances nancial software in the world.

And new Quicken for Windows.

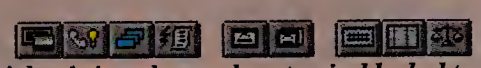


Quicken is simply the most powerful financial software available in Windows. Only Quicken for Windows has all the familiar features that have made Quicken 4.0 the world's most popular financial software. And adds features you won't find anywhere else. Quicken is the only Windows financial software that handles all your finances, including your stocks, bonds and mutual funds. So you can get Capital Gains reports for tax preparation, and see how your investments have performed over time.

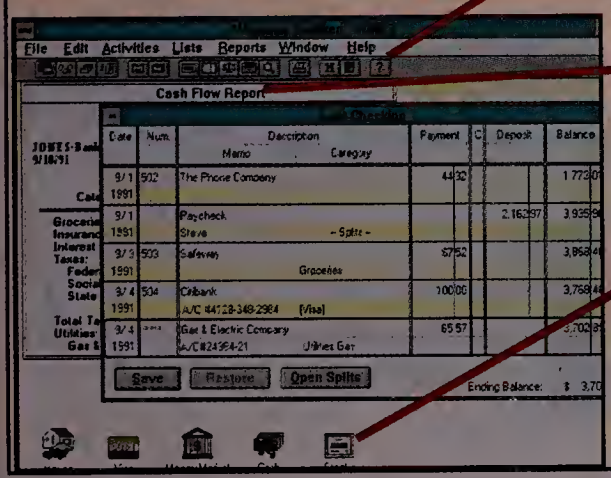
No other Windows financial software pays bills electronically via the CheckFree® payment service or memorizes your customized report settings, saving you time and hassle every month.

Only Quicken gives you the option of automatically memorizing every bill or letting you memorize only the most important ones. And only Quicken gives you QuickScroll™, to move through your register lightning fast.

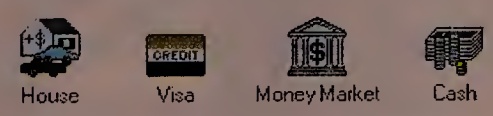
With Quicken you get features, ease, and power that no one else brings to Windows, as well as the flexibility to do what you want.



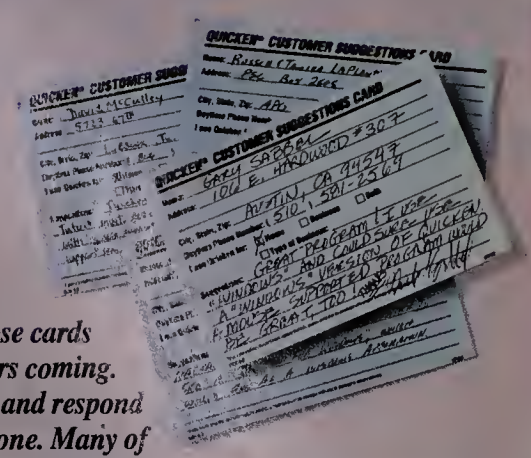
Quicken's icon bar and customizable desktop put the most frequently used functions and accounts at your fingertips for quick "push-button" access.



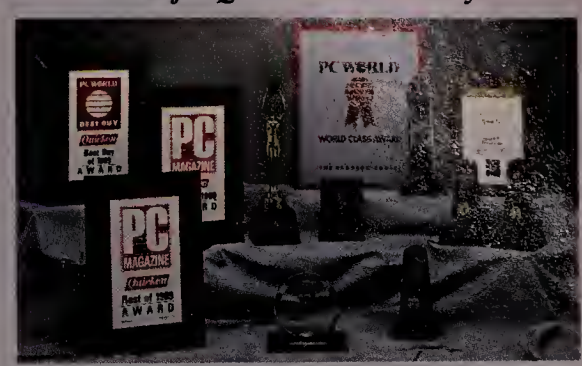
Only Quicken lets you see multiple account and report windows on screen at once, so you can investigate the detail behind numbers and easily plan and forecast.



Create your own Quicken desktop, and keep your most frequently used accounts, lists and reports where you can always find them fast.



Keep those cards and letters coming. We read and respond to every one. Many of the best ideas for Quicken come this way.



Award-winning design is no accident. Quicken's elastic design is made to fit you. You're never asked to change your financial habits.

Two easy, money-saving ways to upgrade.

1. Get a $15 rebate when you upgrade at your dealer, or
2. Use the coupon below, or call toll-free

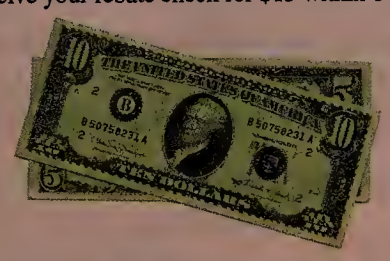
1-800-624-8742

24 hours a day, 7 days a week, U.S. and Canada.

Upgrade at your software dealer — and get $15 back!

Quicken owners: Buy either new version of Quicken at your favorite store before December 31, 1991 and get $15 back. Here's how:

1) Buy either Quicken 5.0 or Quicken for Windows at your local dealer. (Some stores are providing the $15 rebate at the time of purchase. These purchases do not qualify for another rebate by mail.)
2) Circle Quicken's purchase price and date on your store receipt.
3) Turn to the back of your old Quicken manual and tear out the Special Offer Coupon #2.
4) IMPORTANT: Fill out the information on the back of Special Coupon #2. On the "Additional Information" line, write in your disk size preference (3.5" or 5.25") and whether you bought: Quicken 5.0, Quicken for Windows, or the Quicken/TurboTax combo. (Combo available in stores about 11/11/91.)
5) Mail your original store receipt along with your completed Special Coupon #2 to: Quicken Rebate Offer, 5070 Santa Fe Street, San Diego, CA 92109
6) Receive your rebate check for $15 within 6 weeks.



Important Information: Offer valid only for owners of Quicken versions 1-4. Rebate good on retail store purchases of Quicken 5.0 or Quicken for Windows only (rebate good on one or the other, not both). Mail-in rebate not valid for Quicken purchased at stores giving the rebate at the time of purchase. Your receipt must be dated by December 31, 1991, and your letter postmarked by January 15, 1992. Original store receipt and original Special Coupon #2 must accompany request. No mechanical reproductions, photocopies or faxes accepted. Void where prohibited by law.

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If you're not satisfied with any Quicken product for any reason, simply return it within 60 days for a full refund – no questions asked.

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__ **Quicken for Windows** for just $29.95.
I own Quicken (circle) 1 1.5 2 3 4 now and I'm including the original Special Coupon #2 from the back of my Quicken Manual.

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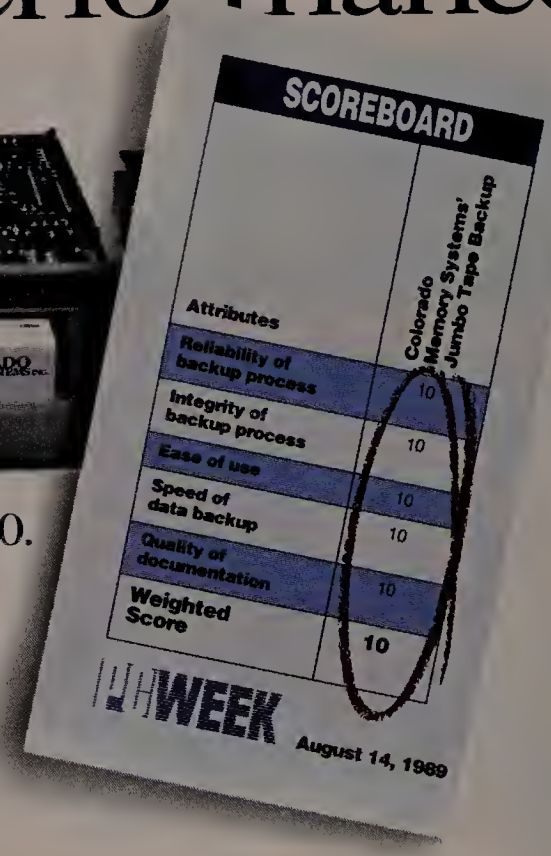

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PC WEEK August 14, 1989

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Circle 46 on reader service card

COMMUNICATIONS Q&A

On-line resources for business and professional users

Judy Heim

Q. *I use the Official Airline Guides to find the best (and least expensive) flights for business trips. What's the cheapest way to access OAG? —Johnny Stewart, Ithaca, New York*

A. During the day, CompuServe is the best deal: $40 an hour. At night, GEnie offers the cheapest rate: $16 an hour. Both prices include all on-line charges.

Q. *Sometimes when my MNP modem calls another system, I see odd characters on screen when the modem connects. Then nothing. What's going on? —Denyse Roberts, Brooklyn, Kansas*

A. MNP modems feature hardware-based error correction. When your MNP modem tries to forge a link with a non-MNP unit, problems can occur. It could be your modem's fault, or it might be a defect in the answering modem. Only one thing is certain: Both modem vendors (and the on-line service, if one is involved) will blame it on you.

Before you get *really* mad, verify your modem's MNP connection setting. First look in the manual for the AT command that displays your modem's default settings. Then load your communications software and enter that AT command at the terminal screen, followed by **<Enter>**. You'll get a list of register values; the manual will tell you which one represents the MNP setting.

Three settings are possible: (1) If the MNP link fails, your modem will hang up; (2) if MNP fails, your modem will try to establish a non-MNP link; (3) MNP is disabled up front.

The best setting is the second, because your modem will fall back to a normal link if MNP fails. You'll find MNP settings listed alongside the appropriate AT commands in your manual, as well as instructions for writing the new settings to the modem's non-volatile RAM. Or you can add the appropriate AT command to the modem initialization string in your communications software.

If the modem still has problems forging a link with one particular non-MNP modem, go for door number three, the one that deactivates MNP altogether. You shouldn't make this a permanent change, of course, so just type the appropriate AT command at the terminal screen, then **<Enter>**, before dialing.

If all else fails, try waiting 5 to 10 seconds after the remote modem answers, and then press **<Enter>** a few times. Poorly engineered modems sometimes need extra time to interpret each other's smoke signals before they start to talk.

Q. *I'm a new subscriber to CompuServe (CIS), and I'm planning to upload a mailing list program I wrote onto the PC SIG. CIS says that uploading software is free, but someone else mentioned there were hidden costs. What's the story? —Winston Armstrong, Miami, Florida*

A. The concept of *sharing* (as in shareware) has been a deep-seated principle in the world of on-line telecommunications. Uploading shareable software is a popular form of tithing and is encouraged by BBS's and on-line services.

A big library of free software is a draw for potential subscribers, so many BBS's boost the size of their file collections by offering incentives for users to upload: extra time on-line, access to special features, even prizes. Some take a more Draconian tack and drop users who *don't* upload—the electronic equivalent of publish or perish.

CIS and GEnie advertise that uploading is free. Unfortunately, there ain't no such thing as a free upload. On GEnie, uploading one file will cost you an average of 40 cents, even at night. That's how much it costs to exit the no-charge area of the service, enter the premium-charge file area, and initiate the upload. The toll clock stops during the upload, but if it bombs, the clock begins again while you restart the file transfer. On CIS, if it takes you 3 minutes to maneuver into the proper file forum and begin the transfer, you'll pay 60 cents. The moral? It's better to receive than to give.

Send your communications questions to Judy Heim, CompuServe 71570,-3712; GEnie JUDY.HEIM; MCI Mail 312-7737; Internet 3127737@MCI-MAIL.COM; 415/442-1891 (fax); or mail them to Communications Q&A, PC World, *501 Second St. #600, San Francisco, CA 94107.* PC World *pays $50 for published questions. Sorry, we cannot acknowledge submitted materials.*

Judy Heim is a contributing editor for PC World.

ANTHONY RUSSO

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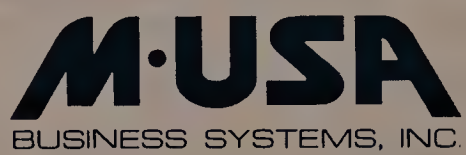

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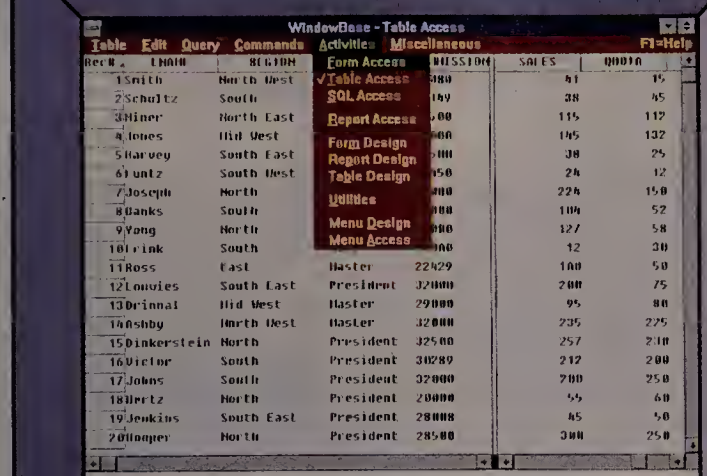

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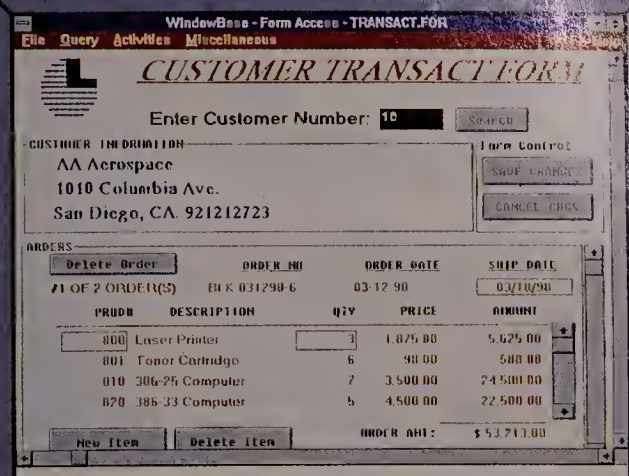

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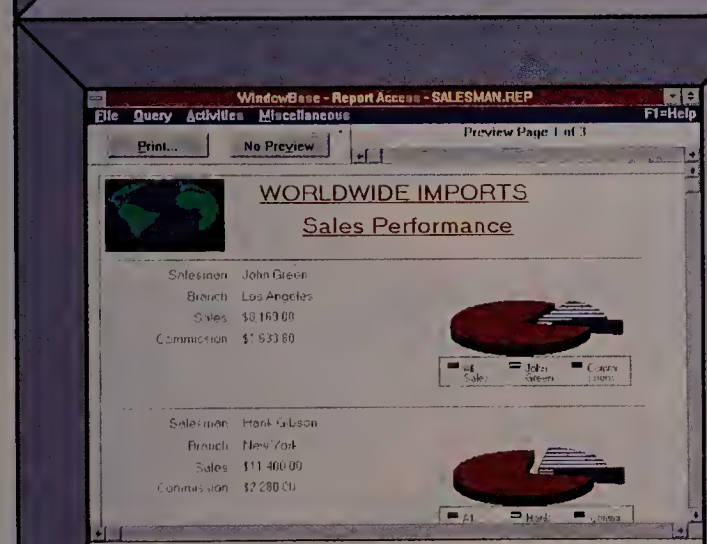

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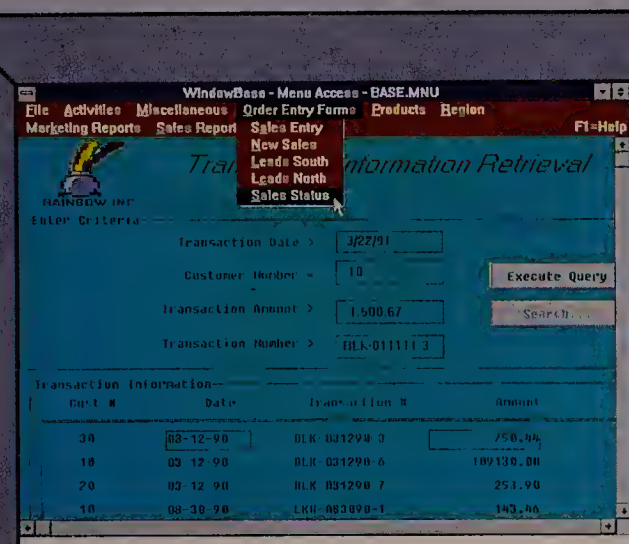

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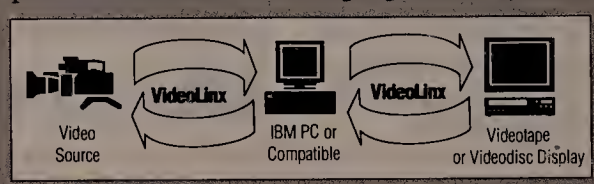

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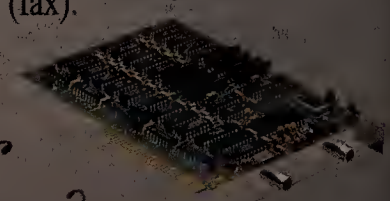

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WINDOWS WORKSHOP

Practical answers to your questions about Windows

Jesse Berst and Scott Dunn

Windows Meets DOS 5.0—and Stalls

Q. *We recently upgraded the 386 PCs in our office to DOS 5.0 so we could take advantage of its DEVICEHIGH= command, which frees up conventional RAM by loading device drivers and TSRs into extended memory. Unfortunately, now some of our PCs won't run* Windows *in enhanced mode, and none will run it in standard mode. What's going on?*

J. Kelly Dixon
Gettysburg, Pennsylvania

A. Chances are the problem lies with DOS 5.0's EMM386.EXE memory manager, which is required when using the DEVICEHIGH= command. Although EMM386 frees up more conventional memory for DOS applications running under *Windows*, it's not compatible with *Windows'* standard mode. You must remove or disable the DEVICE=EMM-386.EXE line in CONFIG.SYS or run *Windows* in enhanced or real mode.

If *Windows* won't run in enhanced mode, chances are it's low on extended memory; *Windows* needs at least 1MB. You can free up extended memory by disabling your system's ROM shadowing, removing unnecessary device drivers from extended memory, or disabling those that use extended memory. For example, reduce Smartdrive's minimum disk cache size (the second parameter) or even set it to zero.

If the message 'EMM386: Unable to start Enhanced Mode Windows due to invalid path specification for EMM386' appears, your PC simply can't locate EMM386.EXE. The solution? Tack on a special parameter (/Y=*path\filename*) that specifies which directory holds the memory manager, for example, **DEVICE=EMM386.EXE /Y=C:\SYSTEM\EMM386.EXE**.

Then again, a better solution might be to forget EMM386.EXE altogether and use *QEMM* or *386Max*—memory managers that do the job with fewer hassles.

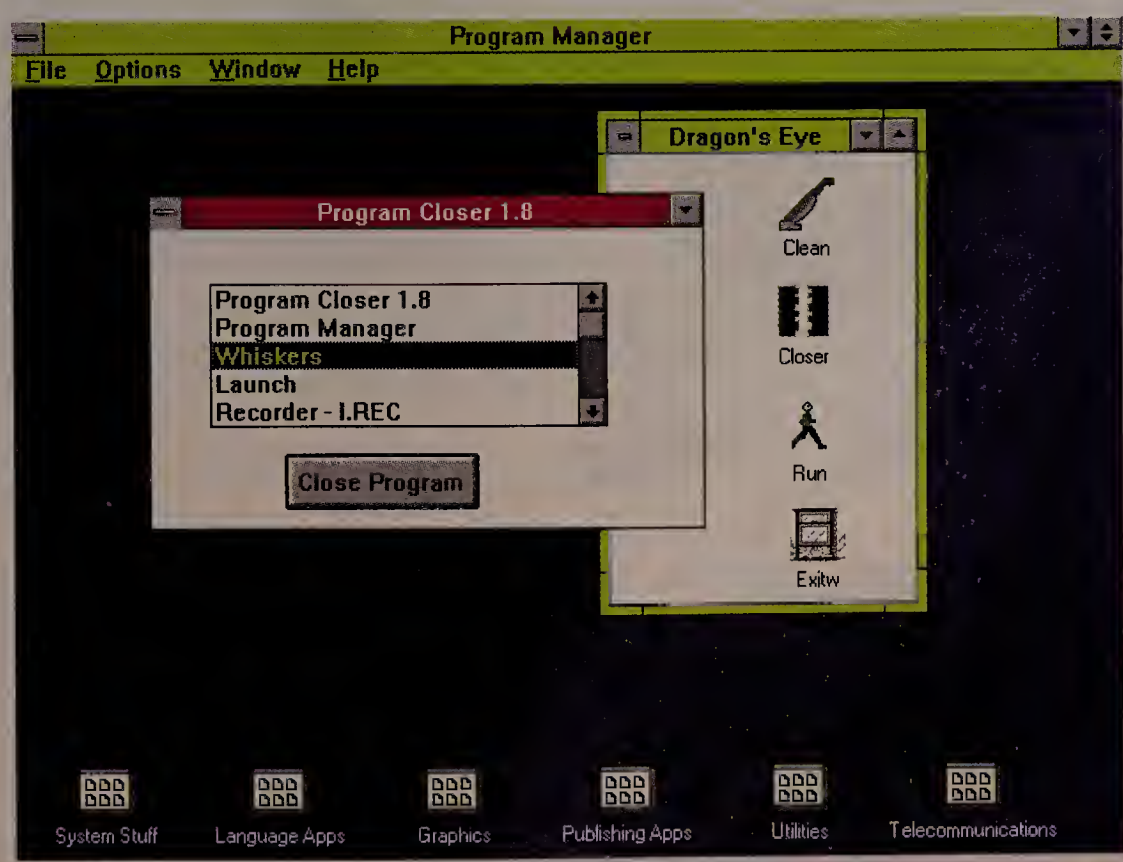
Change Video Drivers on the Fly

Q. *Sometimes I need to use a high-resolution 256-color video driver for graphics work in* Windows. *The rest of the time, I'd rather stick with* Windows' *standard (and faster) 16-color VGA driver. Is there any way I can easily switch between these drivers without exiting* Windows?

Lee Kent
Bakersfield, California

A. Yes and no. If the installed video drivers modify *Windows'* SETUP.INF file, they'll be available from *Windows'*

Windows Toolbox



If you don't think $10 buys much anymore, check out Dragon's Eye Utilities. This shareware collection (UTL107.ZIP) includes Clean, for recovering every available ounce of RAM; Closer (pictured here), for shutting down "hidden" Windows applications; Run, for launching multiple applications; and Exitw, for quickly escaping Windows. Dragons Eye Software, P.O. Box 200262, Arlington, TX 76006-0262; 817/265-5619. Reader service no. 601

ANTHONY RUSSO

Setup program. To switch drivers, click the *Windows* Setup icon, select *Options*, then *Change System Settings;* in the Display field, pick the desired driver, and click *OK*. Click the Restart Windows button, and you'll be up and running in a few seconds.

If the drivers didn't modify SETUP.INF, you're going to have to exit *Windows*, but you can create batch files that change the video driver and start *Windows* in one swoop. The secret is creating multiple versions of SYSTEM.INI, the system file that contains the driver information.

First, save a backup copy of SYSTEM.INI in another directory for safety's sake. Now, configure *Windows* with the 256-color driver, exit, and rename SYSTEM.INI as **SYSINI.256**. Then configure *Windows* with the standard 16-color VGA driver, and rename SYSTEM.INI as **SYSINI.16**. Finally, create two batch files, 16.BAT and 256.BAT, that both copy the SYSINI file you want over the original SYSTEM.INI and start *Windows*. For example, to switch to 256-color mode, 256.BAT would say:

```
CD\WINDOWS
COPY SYSINI.256 SYSTEM.INI
WIN
```

You can also use this trick to change default system fonts or switch between mouse drivers.

Just remember that environmentwide changes may need to be reflected in all the versions of SYSTEM.INI. For instance, if you install *Adobe Type Manager* or replace the mouse, you'll need to edit all the SYSINI files.

Fix That PIF!

Q. *I multitask DOS applications in 386 enhanced mode, so I naturally use the PIF editor a lot. But when I try to change the Application Shortcut Key [in the Advanced Options PIF screen], I cannot remove the old shortcut. Backspacing in the text box seems to delete the shortcut assignment, but when I reopen the PIF file, the old shortcut is still there. Help!*

Glenn Miyagi
Pearl City, Hawaii

A. Calm down. Simply press **<Ctrl>-<Shift>-<Backspace>** (instead of pressing <Backspace> alone), and the text box will read 'None.' Now change the shortcut key. Remember to click *OK* and save the PIF before exiting.

Send your questions to Windows Workshop, PC World, *501 Second St. #600, San Francisco, CA 94107-1431; CompuServe 74055,412; MCI Mail 179-3813; or 415/442-1891 (fax).* PC World *pays $50 for published questions. Sorry, we cannot acknowledge submitted materials.*

Jesse Berst is a contributing editor for PC World. *He and Scott Dunn are coauthors of* 101 Windows Tips *(Peachpit Press, Berkeley, California, 1991).*

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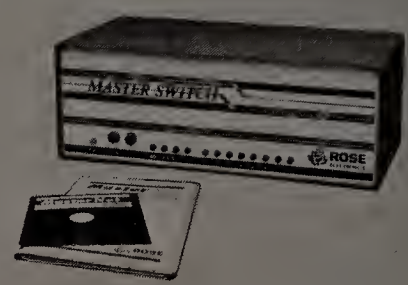

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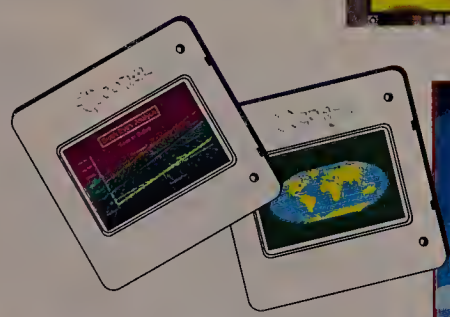

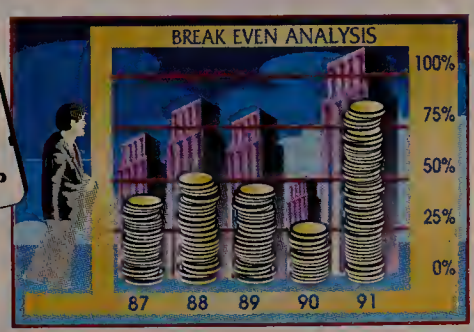

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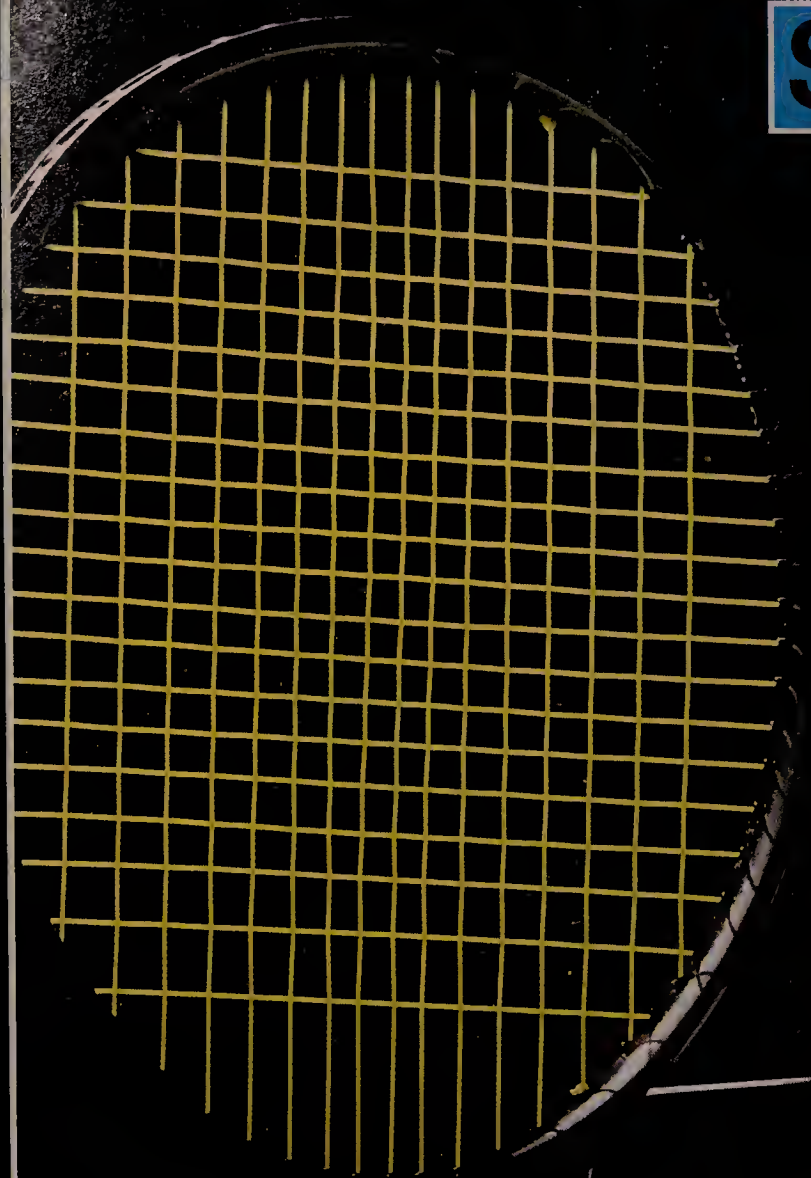

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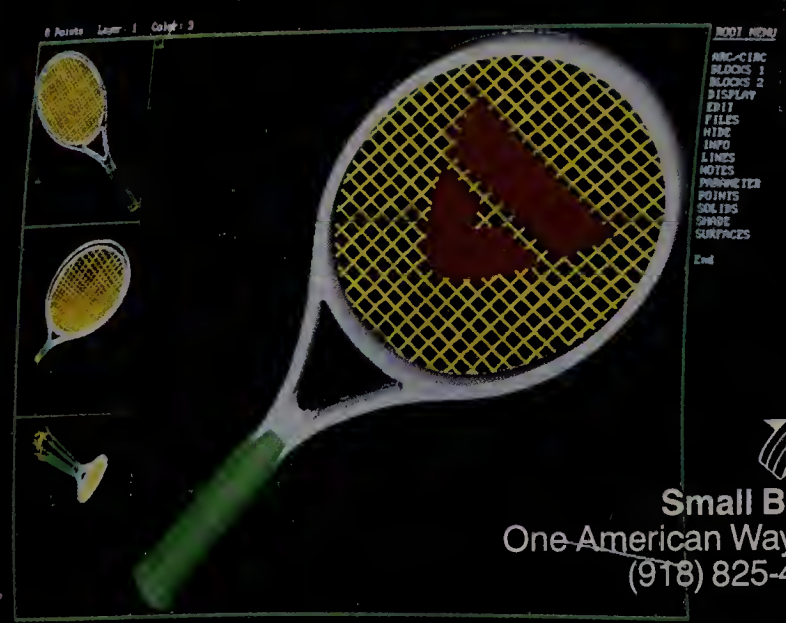

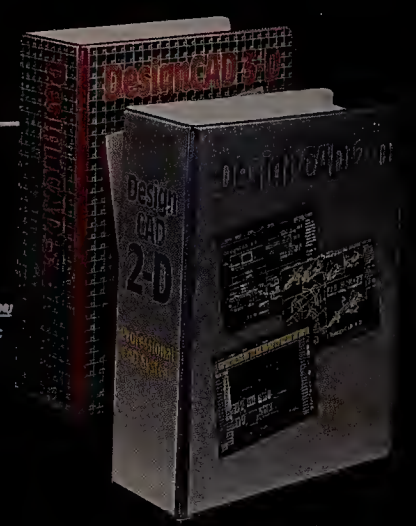

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RON CHAN

Breaking Excel Links

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Jan Altman
Silicon Valley Computer Society

ANTHONY RUSSO

Don't Retry It!

Now and again while copying files to a floppy, you'll get the DOS error message 'Not ready error reading drive Abort, Retry, Fail' (or 'Abort, Retry, Ignore' in DOS 3.2 and prior versions). Perhaps you've inserted a bad, unformatted, or write-protected disk. You may be tempted to take out the floppy, insert another, and press R to retry your copy—well, don't! When DOS prepares to copy files, it first reads the directory from the target disk. If you switch disks, it will write the first floppy's directory onto the second disk, trashing all its files.

When copying, there's only one safe response to the 'Abort, Retry, Fail' prompt: Press **A** to abort, then start over with a new disk. Otherwise, you're odds-on to wind up with a scrambled disk—a double disaster when you have important files on your target disks.

Bill Weil
San Francisco PC Users Group

A Neater Path Listing

The PATH command is a useful instruction. You issue it followed by the set of directories you want DOS to search should you issue a command whose file isn't in the default directory. That means you don't have to change directories to run programs. However, listing unnecessary directories slows down this extended search. Also, DOS recognizes only the first 127 characters of any command—the rest go unseen. To list the PATH statement on screen and determine if you need to add or delete directories, you can enter **PATH** at the DOS prompt. Unfortunately the resultant horizontal-style listing can be confusing. If your list of directories is less than 106 characters long, avoid eyestrain by using an ASCII editor (EDLIN or the ASCII mode of your word processor will do) to create SHOWPATH.BAT, which lists each directory on a separate line:

```
@ECHO OFF
CLS
ECHO Directories in PATH command
FOR %%A IN (%PATH%) DO ECHO %%A
```

Type SHOWPATH at the DOS prompt for a neat vertical listing.

Bob Kelley
Tucson Computer Society

WordStar's Quick File Search

After you press a key to select a function (such as D to open a document or P to print a file) from the opening menu of *WordStar 5.5* or later versions, press **<Down>** or **<Ctrl>-X**, and your blinking cursor will pop into the Directory: You can then use your cursor keys to highlight the file you want to select. But to save time once your cursor is in the Directory, just press the first character of the file you want. *WordStar* will highlight the first file beginning with that letter or number. Press the character again, and your cursor will jump to the second file that begins with it, and so on. When you have the file you want, press **<Enter>** to select it.

David Rafky
WordStar Users' Group
Miami, Florida

Are you a user group member with a tip to share? Send it to User Group Tips, PC World, *501 Second St. #600, San Francisco, CA 94107; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax)—include your phone number and the name of your group. We pay $50 and send a* PC World *T-shirt for each tip we use—and you get to see your name in* PC World.

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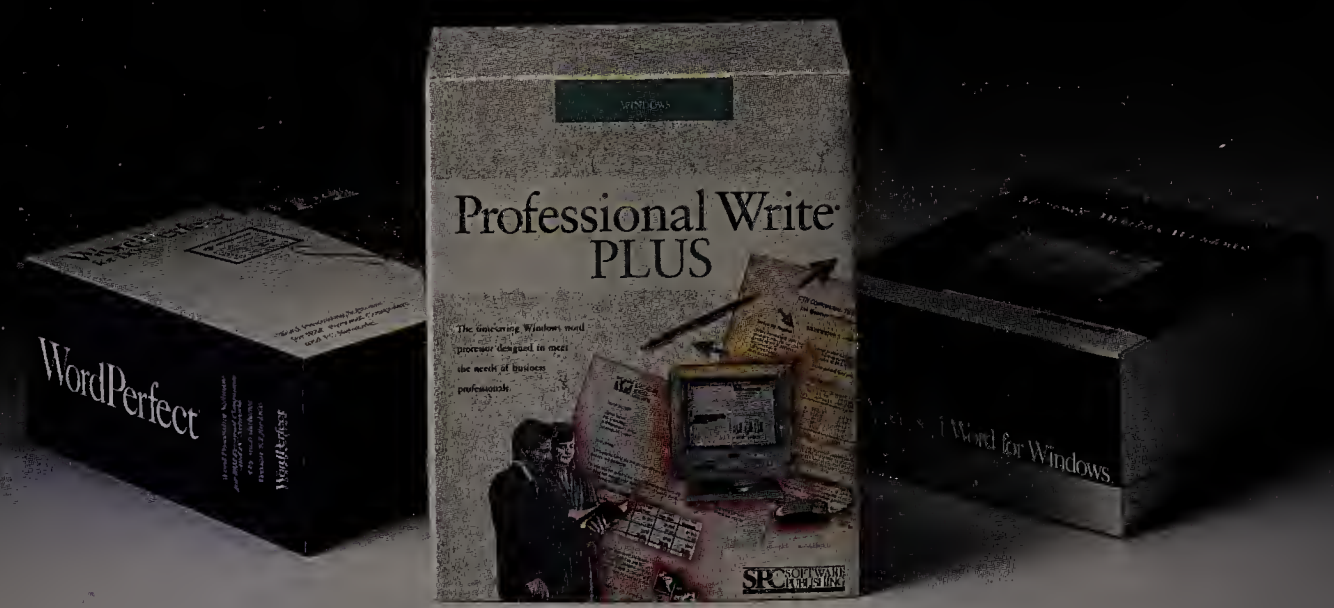

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Edited by Brett Glass

Keeping Your Secrets Secret

If you want to control access to your PC, here's a program that may be just what you're looking for. It's not intended for material that demands maximum security, but it should keep anyone who's not technically sophisticated from tampering with your computer.

To create the program, SECRET-.COM, copy SECRET.SCR [**LISTING 1**] to an ASCII text file, leaving a blank line just above the one that begins 'rcx'. Create an 8-character password in place of the word 'password'. Finally, run the script through DEBUG by typing **DEBUG < SECRET.SCR** at the DOS prompt.

To restrict access to your PC, place the new SECRET.COM at the beginning of your AUTOEXEC.BAT file. Anyone trying to boot your computer will have to know your password to get through.

Lee Carpenter
Rabun Gap, Georgia

Editor's note: Lee Carpenter, the 17-year-old author of this program, has created a very useful utility for PC World *readers. I made a few changes to Carpenter's code so the password is easier to change. In addition, the program will now bypass DOS calls for character I/O, preventing someone from getting around the program by pressing <Ctrl>-<Break>.*

Still, as the author points out, the protection isn't foolproof. Depending on your system, the program can be circumvented by booting from a floppy, or by hitting <Ctrl>-C between the time AUTOEXEC.BAT starts running and the time this program is invoked. However, SECRET.COM will shield your PC from users who aren't knowledgeable enough to try these tactics.

Finally, the password must *be 8 characters long—no more, no less. Also, it's case sensitive; if you use capital letters in it, you'll have to do the same when you boot.*

Spread Out Your Spreadsheet Automatically

Typing '123 *filename*' at the DOS prompt, where *filename* is the name of a spreadsheet file, *ought* to cause *1-2-3* to bring up that spreadsheet automatically—but it doesn't. So, most users are forced to start *1-2-3* and then retrieve their files with the **/FR** command.

I use the batch file in **LISTING 2**, named L123.BAT, to start *1-2-3* and automatically load the file I want to work on. If I type **L123** *filename* (without the assumed WK3 extension), the file is loaded at once. If I don't type a file name, I get a blank worksheet.

This batch file assumes that *1-2-3* is in the C:\LOTUS directory and that the data files are in a directory called C:\LOTUS\FILES. You should change the batch file to reflect your own choice of directories.

Mark Burgess
St. Louis

Editor's note: Mr. Burgess's original batch file was intended for 1-2-3 *Release 3; I've changed it to run with the more popular 2.x releases. The principle is the same, only the file extension (continues)*

```
nSECRET.COM
a100
MOV     SI,0148
CALL    0136
MOV     BYTE PTR [0147],00
MOV     DI,017C
MOV     CX,0008
XOR     AH,AH
INT     16
CMP     AL,[DI]
JZ      011D
INC     BYTE PTR [0147]
MOV     SI,017A
CALL    0136
INC     DI
LOOP    0111
MOV     SI,016A
CMP     BYTE PTR [0147],00
JNZ     0131
RET
CALL    0136
JMP     0100
MOV     AH,0F
INT     10
CLD
LODSB
CMP     AL,24
JZ      0146
MOV     AH,0E
INT     10
JMP     013A
RET
DB      0
DB      D,A,'Enter Access Code: $'
DB      D,A,'Access denied$'
DB      '*$'
DB      'password'

rcx
84
w
q
```

LISTING 1: Run this script through DEBUG to produce a password protection program.

ANTHONY RUSSO

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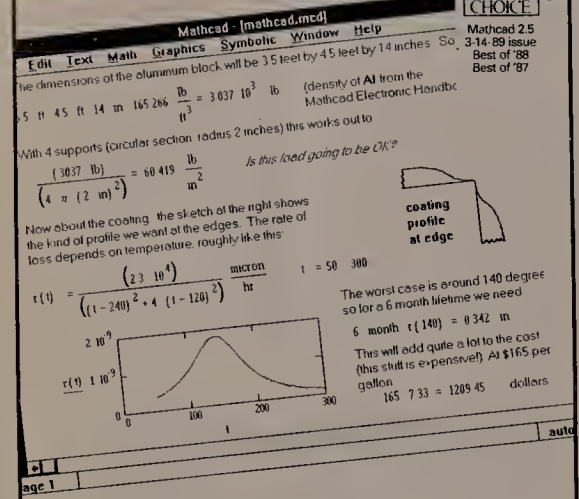

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```
@echo off
c:
if "%1"=="" goto nofile
cd c:\lotus\files
ren %1.wk1 auto123.wk1
set filename=%1.wk1
cd c:\lotus
123
c:
cd c:\lotus\files
ren auto123.wk1 %filename%
set filename=
goto end
:nofile
cd c:\lotus
123
:end
echo on
```

LISTING 2: With this file, you can load 1-2-3 and a worksheet from the command line.

changes. To use L123.BAT with Release 3, change every "WK1" to "WK3".

This batch file takes advantage of a very useful (and surpassingly obscure) feature of 1-2-3*—the AUTO123 file. If there's a worksheet with this name in the default data directory, it's loaded automatically when* 1-2-3 *starts. By simply changing your file's name to AUTO123.WK1 before loading* 1-2-3, *and changing it back again after you exit, the batch file tricks the spreadsheet into loading your file.*

Checking Up on CHKDSK

Due to unruly applications, inexperienced users who share my PC, and a hard disk that's full to overflowing, I have to run CHKDSK frequently. However, I don't want to review the results of the check unless there's a problem. I therefore use a sequence of batch commands [see **LISTING 3**] to keep CHKDSK in the background—unless it finds something important.

The batch works because the DOS COPY command won't copy zero-length files—a quirk I've often found useful in conjunction with the FIND filter.

Jim White
Fargo, North Dakota

Editor's note: Mr. White's batch routine uses some clever tricks to do its job. After writing the results of a CHKDSK to a file (instead of the screen), the batch uses the FIND command three times to search this file for warning phrases that CHKDSK might have written, sending the results to three new files. If FIND doesn't find anything—in other words, if CHKDSK found no problems—all three FIND-created files will be empty. Since COPY won't work on a zero-length file, CHK.$$5 won't be created, and a simple 'if not exist...go to' statement will direct your batch file elsewhere.

This technique can be used in any batch where you want to perform a specific action if the FIND command found something—or didn't. This lets

(continues)

```
@echo off
echo Checking for disk problems....
if exist c:\tmp\chk.$* del c:\tmp\chk.$*
chkdsk > c:\tmp\chk.$1
find "non-contiguous" < c:\tmp\chk.$1 > c:\tmp\chk.$$2
find "lost clusters" < c:\tmp\chk.$1 > c:\tmp\chk.$$3
find "cross-linked" < c:\tmp\chk.$1 > c:\tmp\chk.$$4
copy c:\tmp\chk.$$? c:\tmp\chk.$5 > nul
if not exist c:\tmp\chk.$5 goto continue
echo CHKDSK reports potential problems:
more < chk.$1
pause
:continue
del c:\tmp\chk.$*
```

LISTING 3: This batch file reports the results of a CHKDSK only if the disk contains errors.

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you monitor the output of many DOS utilities, including CHKDSK, ATTRIB, and DIR, for lines that indicate your system requires attention. To run CHKDSK every day without being bothered with the results, put White's commands—or something like them—into your AUTOEXEC.BAT file. And if you have a RAM disk, you can speed up your batch by writing all those temporary files to it.

<Alt> Alternates

If you use TSR (terminate and stay resident) programs such as *Sidekick*, you know that they can eat up precious memory. If you need that memory back—say, to load a big worksheet—you may have to reboot. And if the TSR is loaded by AUTOEXEC.BAT, rebooting isn't enough; you'll have to edit or rename AUTOEXEC.BAT first.

ALTKEY.COM is a 10-byte solution to this problem, allowing you to choose whether your TSRs are loaded at boot time. To create the program, enter **LISTING 4** into an ASCII text file called ALTKEY.SCR, making sure to keep the blank line before the 'rcx' line. Then, type **DEBUG < ALTKEY.SCR** at the DOS prompt. Finally, move ALTKEY.COM to a directory listed in your PATH command, and modify your AUTOEXEC.BAT file to look something like:

```
ALTKEY
IF ERRORLEVEL 8 GOTO NO-TSRS
      ⋮
[Commands to install TSRs]
      ⋮
:NO-TSRS
      ⋮
[Rest of AUTOEXEC.BAT]
```

Under a normal reboot, your TSRs will load. But if the <Alt> key is held down when ALTKEY.COM executes inside AUTOEXEC.BAT, it will return ERRORLEVEL 8, and the batch file will skip the TSRs.

If you prefer, you can use a key other than <Alt> by replacing the 8s in **LISTING 4**'s AND AL,8 line and your AUTOEXEC's IF ERRORLEVEL command with another key code [see **TABLE 1** for codes]. You'll also want to change the name of the resulting COM file to something more appropriate. Be careful with <Num Lock>, however; in many PCs

```
nALTKEY.COM
a100
MOV     AH,2
INT     16
AND     AL,8
MOV     AH,4C
INT     21

rcx
a
w
q
```

LISTING 4: Run this script through DEBUG to create ALTKEY.COM, which lets a batch file respond to a user holding down the <Alt> key.

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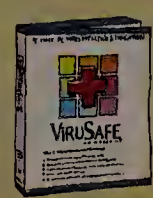

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with extended keyboards, <Num Lock> is turned on automatically at boot time.

Brian Elwood
Lincoln, Nebraska

Editor's note: ALTKEY.COM has many uses and will work wherever you want the state of a key to influence a batch file's execution. Using a key like <Num Lock> isn't necessarily a bad idea, since users don't have to worry about holding it down; they can set the key one way and think about something else while the batch runs. The same is true of <Scroll Lock>, <Caps Lock>, and <Insert>, all of which toggle their states when pushed.

Codes for PC Shift Keys

Key	Code
Right Shift	1
Left Shift	2
Ctrl	4
Alt	8
Scroll Lock	16
Num Lock	32
Caps Lock	64
Insert	128

TABLE 1: These codes reflect the status of shift keys, like <Alt>, and toggle keys, like <Scroll Lock>, on the PC keyboard.

Many Ways to ERR

Several readers responded to Robert Siegel's 1-2-3 *error checker in the August issue, "To ERR is Electronic," by pointing out that the formula @IF(C12,(B11-C12)/C12,"") works just as well as the more complicated one we printed. This is true—in the specific situation Siegel described.*

However, Siegel's formula is much more versatile. Since the @IFERR function can catch any condition that generates an ERR, it will handle formulas involving logarithms, exponentials, trigonometric functions, and date functions—in which errors, overflows, and underflows are harder to predict. Thus, unless it's easy to catch an error condition (as it is in this case), it's best to play safe and test for ERR instead.

In another tip from the August issue, Brian Mowers' "To Boldly Go Where CHKDSK Can't," we were the ones to err. According to the written tip and the caption, running the accompanying script through DEBUG would produce a file called FS.COM (for Free Space). In actuality, it produces a file called MF.COM. However, only the file name is different; the program itself remains the same.

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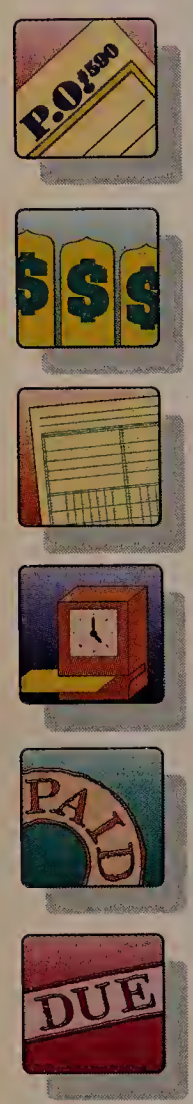

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Brett Glass is a contributing editor for PC World.

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Thomas A. Lankard
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BASICS: 1-2-3 FOR WINDOWS

What to do: You can choose a *1-2-3 for Windows* menu or menu option by clicking the left mouse button on its name or by pressing **<Alt>** or **<F10>** and typing the name's underlined letter (shown here in bold). To end most commands, press **<Enter>** or click OK. To exit a menu or dialog box, press **<Esc>** until the 'READY' indicator appears on the far right side of the control panel's format line.

Tip: You can use *1-2-3* release 3.1 Classic commands by pressing / or <.

GETTING STARTED

Create new file	**F**ile **N**ew
Open existing file	**F**ile **O**pen, type or select name
Save file	**F**ile **S**ave
Save file with new name	**F**ile Save **a**s, type name
Close file and window	**F**ile **C**lose
Print spreadsheet	Select area, **F**ile **P**rint, select options
Undo last action	**<Alt>-<Backspace>** or **E**dit **U**ndo
Get context-sensitive help	Choose command, **<F1>**
Get function help	**@<F1>**
Get macro help	**{<F1>**
Look at Help Index	**H**elp **I**ndex
Look at a help topic	Click on one of the highlighted words
Leave help	**F**ile Exit; or **<Alt>-<F4>**
Leave *1-2-3 for Windows*	**F**ile Exit; or **<Alt>-<F4>**

Fold Here

GETTING AROUND

Go to cell, range, or open file	Click on the cell; or **<F5>**, type address or select range or file
Go to window	Click on window; or **W**indow, **1/2/3/...**
Switch panes in current window	**<F6>**

Single Worksheet

Move left/right one screen	**<Ctrl>-<Left>** or **<Shift>-<Tab>/ <Ctrl>-<Right>** or **<Tab>**
Move up/down one screen	**<Page Up>/<Page Down>**
Go to first nonblank cell next to blank cell	**<End><Up>/<End><Down>/ <End><Right>/<End><Left>**
Go to last nonblank cell	**<End><Home>**
Go to cell A1	**<Home>**

Multiple Worksheets

When you move from one worksheet to another in the same file in full-screen view, the cell pointer appears in the cell last highlighted in the destination worksheet. In perspective view, the cell pointer moves to the same row and column location in each worksheet.

Go to next sheet	**<Ctrl>-<Page Up>**
Go to previous sheet	**<Ctrl>-<Page Down>**
Go to first nonblank cell next to blank cell	**<End><Ctrl>-<Page Up>** or **<End><Ctrl>-<Page Down>**
Go to last nonblank cell	**<End><Ctrl>-<Home>**
Go to cell A:A1	**<Ctrl>-<Home>**

Multiple Files

Across files, in any view, the cursor moves to the cell last highlighted in the destination file.

Cycle through files	**<Ctrl>-<Tab>** or **<Ctrl>-<F6>**
Go to next file	**<Ctrl>-<End><Ctrl>-<Page Up>**
Go to previous file	**<Ctrl>-<End><Ctrl>-<Page Down>**
Go to last file	**<Ctrl>-<End><End>**
Go to first file	**<Ctrl>-<End><Home>**

ENTERING INFORMATION

Anything you enter, unless it starts with a number or an arithmetic sign, is a label.

Align label left	Begin with ' (apostrophe)
Align label right	Begin with "
Center label	Begin with ^
Repeat label to fill cell	Begin with \
Suppress printing row	Begin with | in first column of print range
Display range names	Type formula or function, **<F3>**
Display @ functions	**@<F3>**
Display macro commands	**{<F3>**
Enter a date	Type date in a *1-2-3* date format; or use **@date(***yy,mm,dd***)** and format it
Enter a time	Type time in a *1-2-3* time format; or use **@time(***hh,mm,ss***)** and format it
Make address absolute	Type address, **<F4>** (keep pressing **<F4>** for variations)

EDITING A CELL

Start editing	**<F2>** or click on right half of edit bar
End editing	**<Enter>** or click on check-mark button
End editing without change	**<Esc><Esc>** or click on X-mark button
Delete character to right	**<Delete>**

Fold Here

Delete character to left	**<Backspace>**
Erase edit area	**<Esc>**
Go to left end of entry	**<Home>**
Go to right end of entry	**<End>**
Move five characters left/right	**<Ctrl>-<Left>/<Ctrl>-<Right>**
Toggle insert/overtype modes	**<Insert>**
Find/replace characters	Select range, **E**dit **F**ind, type characters, select *Find/Replace with*, type replacement characters, select *Labels/ Formulas/Both*, select *Find next/Replace/ Replace all*

WORKING WITH RANGES

A range is a rectangular area that can be a single cell, a row, a column, or a block. You can select a range before or after choosing a command.

Select range with mouse	Click corner cell, hold left mouse button down while dragging over range
Select range with keyboard	Move to starting cell, **<F4>** or hold down **<Shift>**, move to ending cell, **<Enter>**
Copy/move range	**E**dit **Q**uick copy/**M**ove cells, select source range, select destination range
Erase range	Select range, **<Delete>** or **E**dit **C**lear
Define range name	Select range, **R**ange **N**ame **C**reate, type name
Using range names	Start formula, **<F3>**, select name
Change formulas to numbers	**E**dit **Q**uick copy, select source range, select destination range, select *Convert to values*
Fill range with series of values	Select range, **D**ata **F**ill, type start, step, and stop values

WORKING WITH WINDOWS

Cascade/tile windows	**W**indows **C**ascade/**T**ile
Split window into two panes	**W**indows **S**plit **H**orizontal/**V**ertical
Split window into three-sheet perspective view	**W**indows **S**plit **P**erspective
Restore to full-window view	**W**indows **S**plit **C**lear

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PC WORLD

Instant Reference Card #18

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ADVANCED: 1-2-3 FOR WINDOWS

CHANGING THE WORKSHEET

Delete row/column/sheet	Select range, Worksheet Delete, select Row/Column/Sheet
Set width of columns	Drag column header's right edge left/right; or select range, Worksheet Column width, type width in characters
Set height of rows	Drag row header's bottom edge up/down; or select range, Worksheet Row height, type height in points
Insert row(s)/column(s)	Select range (one row/column for each to be inserted) below/to the right, Worksheet Insert Row/Column
Insert sheet(s)	Worksheet Insert Sheet Before/After, type number of sheets
Freeze row(s)/column(s)	Position cursor below/to the right of area to freeze, Worksheet Titles Horizontal/Vertical/Both
Unfreeze row(s)/column(s)	Worksheet Titles Clear
Hide/display column(s)/sheet(s)	Select range, Worksheet Hide/Unhide Column/Sheet
Combine/add/subtract file	Select destination, File Combine from, specify file, select *Copy/Add/Subtract*, select *Entire file* or type range name
Import text/numbers/styles	Select destination, File Import from Text/Numbers/Styles, specify path and file name (for styles, select type)

Fold Here

FORMATTING

Format numbers and formulas	Select range, Range Format, select type, enter number of decimal places
Change font/style	Select range, Style Font, select font/style
Align text in cell	Select range, Style Alignment, select type
Align text over range	Select range, Style Alignment, Align over range, select Left/Center/Right/Even
Change color of range	Select range, Style Color, select color of cell contents/background
Add borders to cells	Select range, Style Border, select edge(s), select line weight(s)
Add border around range	Select range, Style Border, select Outline, select line weight
Add shading	Select range, Style Shading, select type

PRINTING

Preview printed worksheet	Select range, File Preview
Change margins	File Page setup, type margins' numbers (of characters or add **in** for inches)
Add a header/footer	File Page setup, type header/footer
Add info in a header or footer	@ for date, # for page, | for section, *\cell address* for cell contents
Compress worksheet to fit page	File Page setup, select *Automatically fit to page*
Print worksheet frame/grid	File Page setup, select *Show worksheet frame/Show grid lines*

GRAPHING

Create new graph	Select range, Graph New, type name
Change graph type	Chart Type, select type, display, orientation
Change x-axis labels	Chart Ranges, type range
Change plotted range	Chart Ranges, highlight A-F entry, move Chart Ranges box to show worksheet, select new range in worksheet
Change color of range(s)	Chart Options Colors, select color(s)
Add title(s)	Chart Headings, type title(s)
Change font of title(s)	Chart Options Fonts, select font(s)
Add legend	Chart Legend, type range legend(s)
Add text	Draw Text, type text, position text
Change text font	Select text, Style Font, select font
Add object	Draw, select type, draw object
Change color(s) of object	Select object, Style Color, select color(s)
Return to worksheet	Click on or cycle to worksheet
Add graph to worksheet	Select worksheet range, Graph Add to sheet, select graph
Print graph	Add graph to worksheet, select range, File Print
Display graph from worksheet	Graph View, select graph

WORKING WITH DATA BASE TABLES

Sort data base table or range	Select range, Data Sort, specify key(s)/order(s)
Find/delete/extract records in data base	Data Query, select Input range, select Criteria range, select Output range, Find/Delete/Extract
Repeat last Data Query	**<F7>**
Create a one-way what-if table	Type formulas to analyze in first row, type input values in first column, select range spanning formulas and values, Data What-if table 1-way, specify input cell
Repeat last Data What-if table	**<F8>**

Fold Here

Create a frequency distribution	Type bin intervals, select range to analyze, Data Distribution, specify bin range

LINKING EXTERNAL FILES

An external file is any file other than the one you are working on.

Link to external worksheet file	To reference range TAX in C:\BUD\QTR1.WK3 use **+<<C:\BUD\QTR1.WK3>>$TAX**
Link to external data base	Data Connect to external, type ID and password if necessary, select driver, type path, specify file name, type range name
Create DDE link to an application	Select source range, Edit Copy, start application, specify destination, choose command equivalent to Edit Paste link
Delete DDE link	Edit Link options, select link, select *Delete*

MACROS

You can create a macro by typing commands and keystrokes or by recording commands, keystrokes, and mouse selections.

Record macro	Tools Macro Show transcript, select Transcript window, Edit Clear all, select worksheet, perform task to be recorded, select Transcript window, select contents, Edit Copy, select worksheet, select range for macro, Edit Paste, close Transcript window
Name macro	Select starting cell of macro, Range Name Create, type name, select Create
Run macro	**<Alt>-<F3>** or Tools Macro Run, select macro name
Stop macro in progress	**<Ctrl>-<Break><Esc>**
Single step/trace macro	Select macro, Tools Macro Debug, Single step/Trace

Tip: A macro name beginning with \ (backslash) followed by a single letter can be run by holding down **<Ctrl>** and pressing the single letter.

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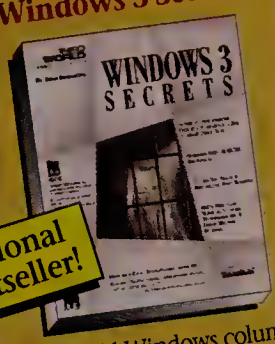

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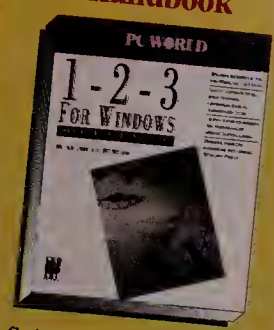

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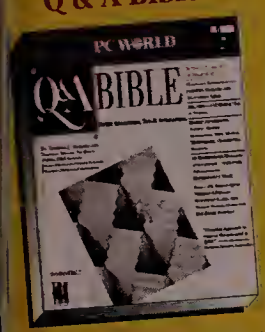

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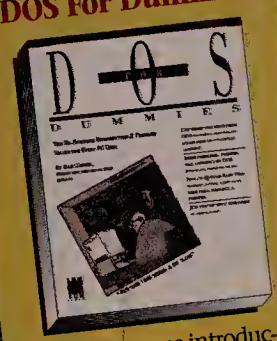

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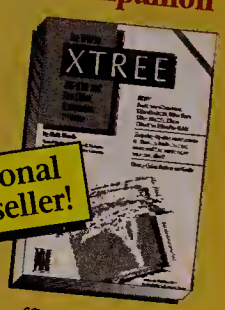

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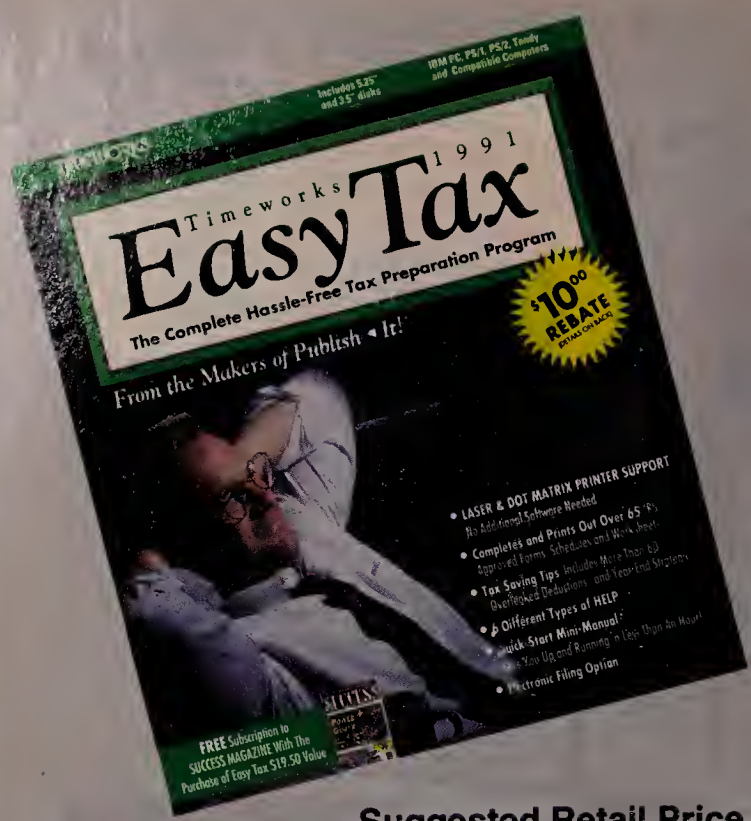

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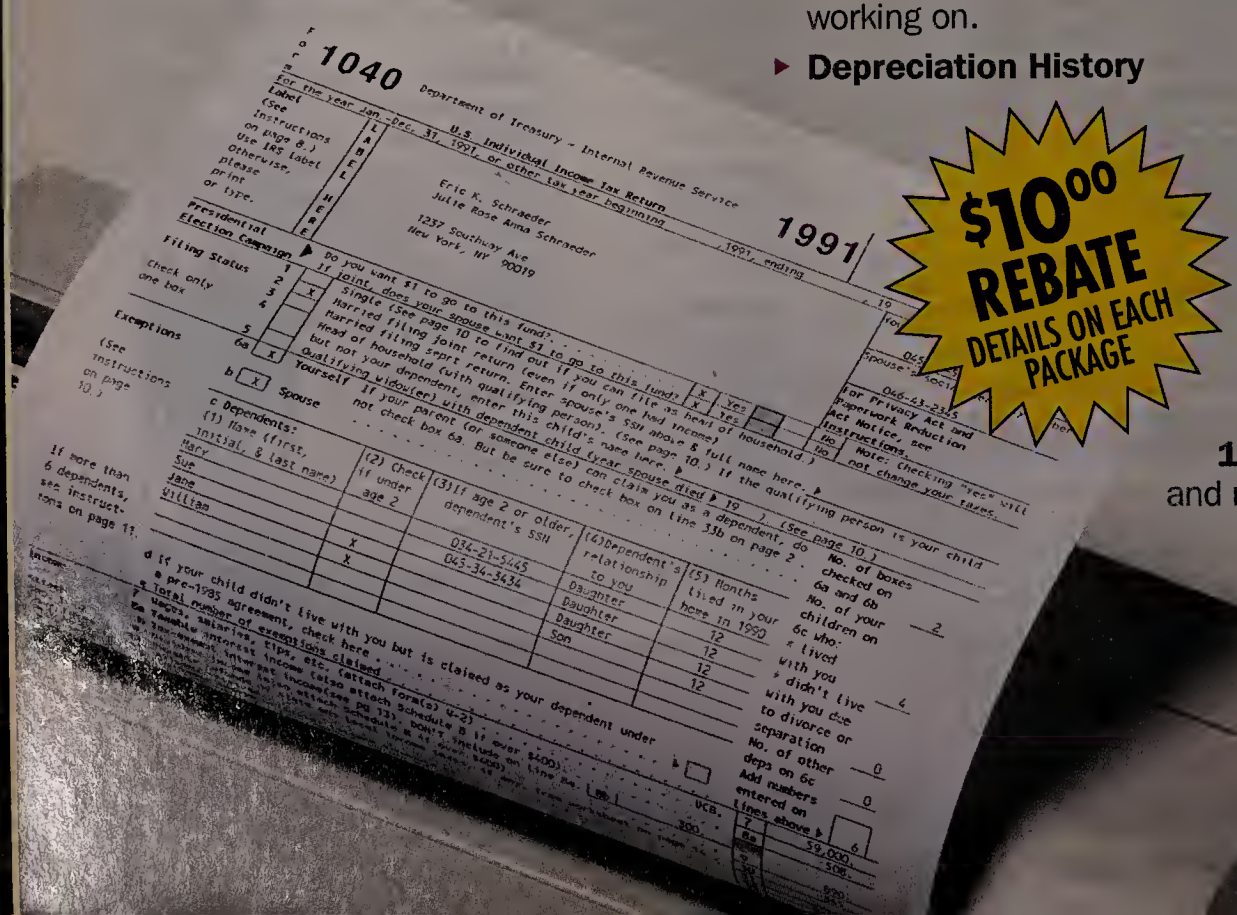

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DEVELOPER'S TOOLBOX

Making Elbow Room for Development

Brett Glass

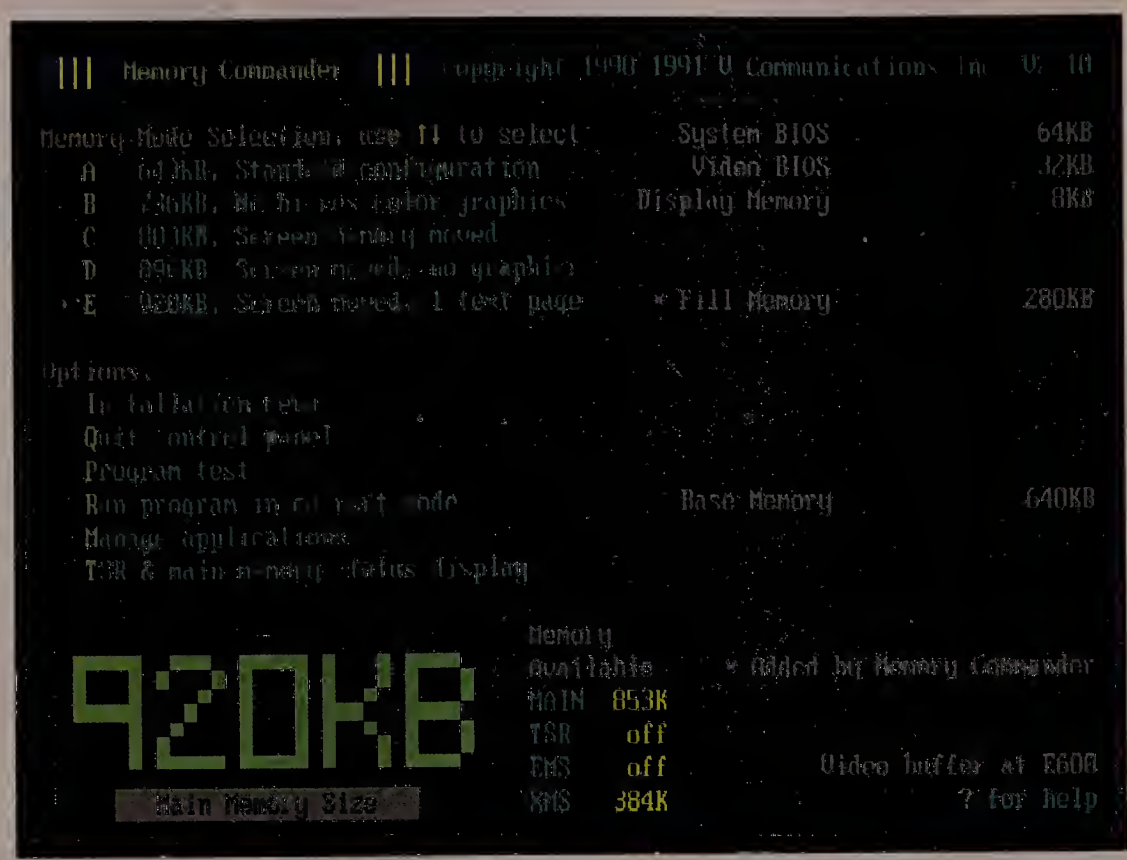
Few discoveries are more disheartening than finding that the program you're writing has outgrown your system's conventional RAM. You add a function, a procedure, a unit, or a module, and the compiler or linker abruptly fails with an 'out of memory' error.

If you're lucky enough to have a compiler or linker that can run in protected mode, this may not be an insurmountable problem: Your code will compile and link more slowly that way, but at least it *will* compile and link. Borland has been shipping protected-mode compilers for some time, and *Microsoft C 6.00ax* works in protected mode, but those are exceptions. If you're using a compiler that doesn't support protected mode, or if you want the fastest compiles possible, you may want to consider a little-known 386 memory manager called *Memory Commander* from V Communications.

Memory Commander is dwarfed by such giants in its product category as *QEMM* and *386MAX*. But it has one heroic feature the others lack: Under the right conditions, *Memory Commander* can provide more than 900K of conventional, real-mode memory.

If you're familiar with PC architecture, you're probably wondering how *any* utility—no matter how clever—can manage that trick. If nothing else, wouldn't the PC's video adapter limit conventional RAM well before that? If an application is well behaved—that is, if it uses DOS and the BIOS for all its I/O—*Memory Commander* uses the 386's paging unit to remap the display to the highest possible area of RAM. And since most compilers are well behaved, programmers can take advantage of this extra room.

You get less real-mode memory with applications that use graphics or write directly to screen memory—but you still wind up with more than 640K. If you're not sure whether your application can run in one of the modes that provide more memory, have *Memory Commander* test the program as it runs.



Seeing is believing; as Memory Commander's control panel shows, under the right conditions it can supply up to 920K of real-mode, contiguous, conventional memory.

And other nice touches abound. ANSI.SYS and a RAM disk driver (a necessity for compilers and linkers with temporary files) are built into *Memory Commander*, saving you yet more RAM because you don't have to load them separately. And unlike other memory managers, this one doesn't make you change AUTOEXEC.BAT or CONFIG.SYS to load TSRs and drivers high; *Memory Commander* intervenes at load time and directs those programs to the correct part of memory.

Memory Commander lacks a few useful features. Unlike *QEMM*, it can't allocate EMS and extended memory from a common pool or run *Windows* in Standard mode (it can run *Windows* in 386 Extended mode). Nor can the program compress the BIOS on a PS/2 the way *BlueMax* can. Finally, because *Memory Commander* plays fast and loose with the video interface, it may conflict with some video cards or programs that do the same.

But still, no other memory manager can provide your programming tools anywhere near the same amount of RAM. While it's not the ultimate solution, *Memory Commander* is a great way to push DOS to its limit.

Have a favorite programming tool you'd like to see discussed here? Send suggestions to my Internet E-mail address, rogue@well.sf.ca.us, reachable from CompuServe, MCI Mail, Internet, and Usenet.

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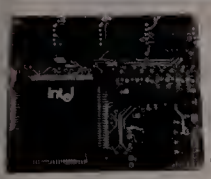

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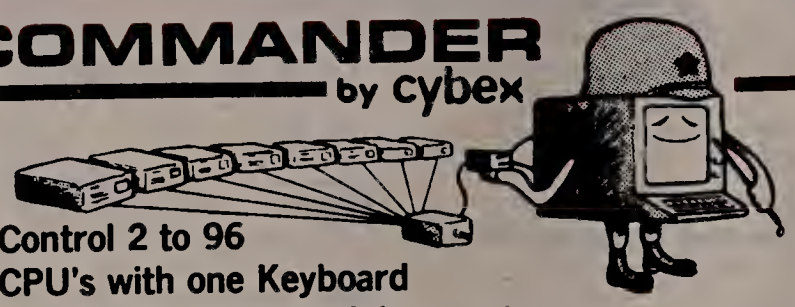

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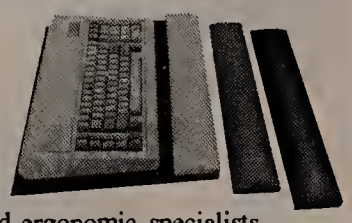

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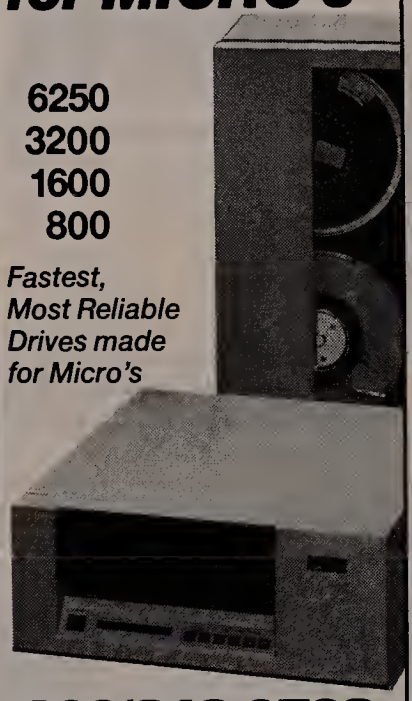

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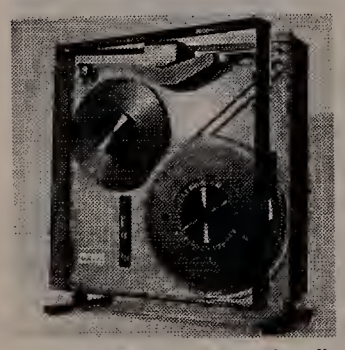

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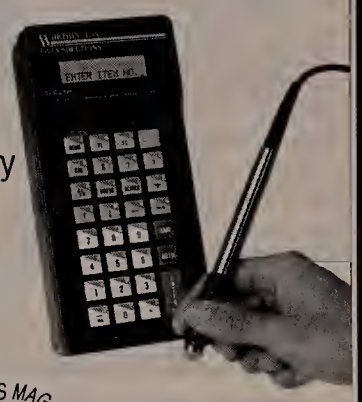

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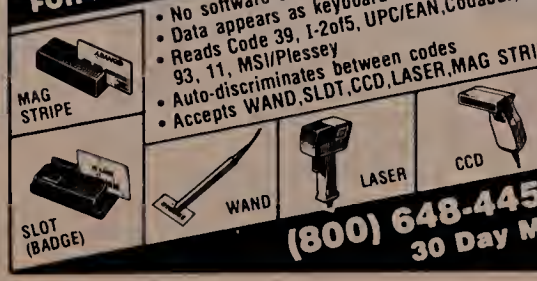

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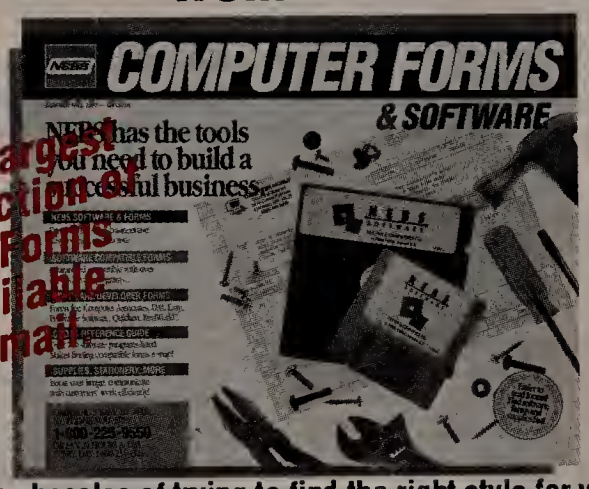

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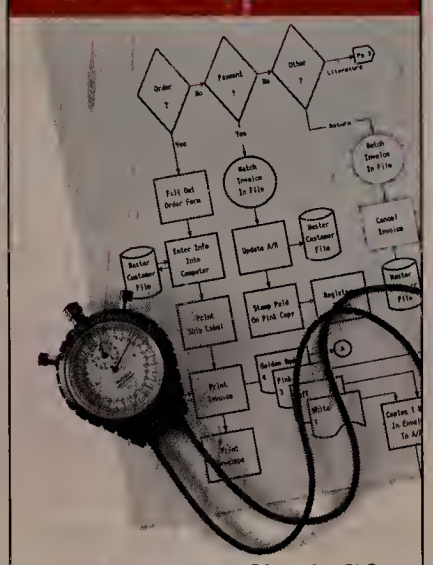

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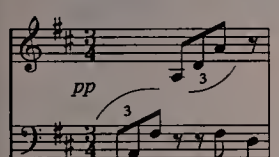

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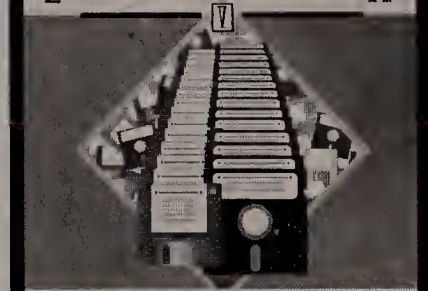

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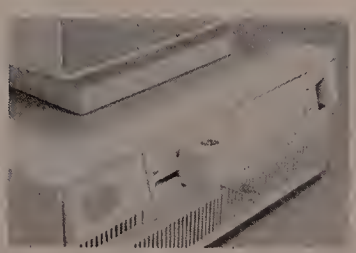

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FastData 386 Systems

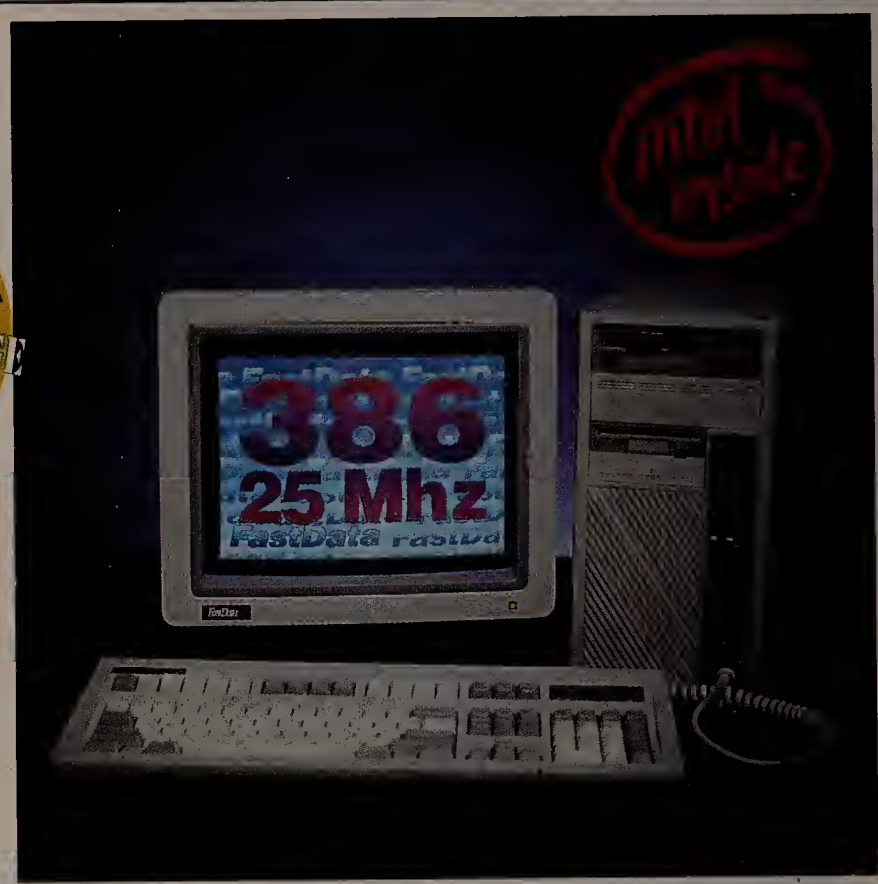
FastData 386/33 $1899

The fastest Intel™ 386 processor available combined with a 64K thirty nanosecond memory cache make the FastData 386/33 a power users dream! Included in the base price is a 80 megabyte 20 millisecond hard disk, 1024 by 768 VGA monitor and card, four megabytes of memory, and 5.25" & 3.5" high capacity floppy drives. Plus, should anything ever go wrong with your FastData computer, you are covered by a one-year warrantee with free on-site service or system replacement if we cannot correct the problem with our FastSHIP advance parts replacement program.

Standard Features

- ✓ 33mhz Intel 386-DX processor.
- ✓ 64K high-speed memory cache.
- ✓ 4 megabytes high speed RAM.
- ✓ 105 mb 17ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) or mini-tower with speed, keylock and reset buttons.
- ✓ 387-DX coprocessor socket.
- ✓ 200 watt power supply.
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 1mb Video Ram.
- ✓ Clock calendar, parallel port, game port and two serial ports.
- ✓ Key Tronic 101 key keyboard.
- ✓ 8 slots & 5 drive bays.
- ✓ Built-in advanced memory management features.
- ✓ MS-DOS 5.0.
- ✓ Windows & Mouse add $69.
- ✓ FCC Class B approved.

386/DX33	80mb	100mb	200mb	660mb
Mono	$1,529	$1,599	$1,849	$3,199
Mono VGA	$1,629	$1,699	$1,949	$3,299
VGA 1024i	$1,829	$1,899	$2,149	$3,499
VGA 1024ni	$1,929	$1,999	$2,249	$3,599



FastData 386/25 $1699

The optimum combination of features, expandability, and power make the FastData 386/25 an ideal choice for those whose applications demand high speed 32 bit processing and expandability. The value of the 386/25 goes far beyond its price; it comes configured with a full four megabytes of fast RAM, a quick 20 millisecond 80 megabyte hard disk, and maximum VGA displaying 1024 by 768 resolution powered by a high-output 16 bit 1mb VGA board. Also, the FastMicro team will configure your FastData 386 exactly the way you want, without sending you shopping elsewhere.

Standard Features

- ✓ 25mhz Intel 80386-DX.
- ✓ 4 megabytes of high speed RAM.
- ✓ 80 mb 18ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25"and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis or mini-tower (shown) with keylock, speed and reset buttons.
- ✓ 80387-DX coprocessor socket.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Key Tronic 101 key keyboard.
- ✓ 8 slots & 5 drive bays.
- ✓ Built-in advanced memory management features.
- ✓ MS-DOS 5.0.
- ✓ Windows & Mouse add $69.
- ✓ FCC Class B approved.

386/DX25	80mb	100mb	200mb	660mb
Mono	$1,399	$1,469	$1,719	$3,069
Mono VGA	$1,499	$1,569	$1,819	$3,169
VGA 1024i	$1,699	$1,769	$2,019	$3,369
VGA 1024ni	$1,799	$1,869	$2,119	$3,469

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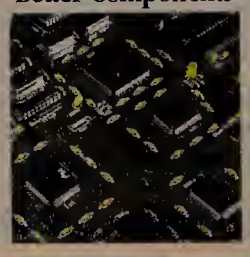

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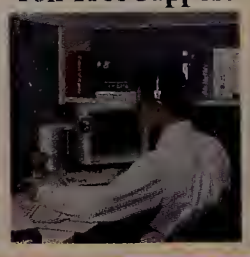

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FastData SX Systems

$1449 FastData SX/20

25% faster than a 16mhz SX, the FastData SX/20 adds even greater performance to its 386 multitasking capabilities. Just $200 more than our SX/16, this machine also includes an 80mb hard drive in addition to the super VGA color monitor and 16 bit VGA adaptor, Keytronics keyboard, DOS 4.01 or 5.0, and two floppy drives. The system includes two megabytes of memory and is expandable to eight on the main system board. Remember, when you have questions, need to solve a problem, or want recommendations on products for your system, the FastMicro team is standing by toll-free to provide product support for as long as you own your FastData personal computer.

Standard Features

- ✓ 20mhz Intel™ 386-SX processor.
- ✓ 2 megabytes of high speed RAM.
- ✓ 80 mb 20ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) or mini-tower with keylock, speed and reset buttons.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Key Tronic 101 key keyboard.
- ✓ 8 expansion slots, 5 drive bays.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add $69.
- ✓ MS-DOS 5.0.
- ✓ FCC Class B approved.

386/SX20	40mb	80mb	100mb	200mb
Mono	$1,019	$1,149	$1,219	$1,469
Mono VGA	$1,119	$1,249	$1,319	$1,569
VGA Color	$1,269	$1,399	$1,469	$1,719
VGA 1024i	$1,319	$1,449	$1,519	$1,769

$1249 FastData 386/SX

Combine the benefits of an advanced Intel 386 processor, the value of a 286 and the advantages of FastData and you've got the FastData 386/SX! This machine is the choice of those who want to run today's powerful 386 and multitasking software, like Windows, and also want to run their favorite DOS applications at surprising speeds. We've made our customers' favorite options standard: it comes with an ample two megabytes of memory, a high performance 40mb hard drive, and 16 bit super VGA. Compare performance, features, and service and you will find no better SX value. Interested further? Try the FastData 386/SX for 30 days; you have to be happy - if not, we'll take it back.

Standard Features

- ✓ 16mhz Intel™ 386-SX processor.
- ✓ 2 megabytes of fast RAM.
- ✓ 40 mb 28ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard , mini tower, or mini desktop (shown) chassis with keylock, speed and reset buttons.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and a game port.
- ✓ Key Tronic 101 key keyboard.
- ✓ 8 expansion slots, 5 drive bays.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add $69.
- ✓ MS-DOS 5.0.
- ✓ FCC Class B approved.

386/SX16	40mb	80mb	100mb	200mb
Mono	$949	$1,079	$1,149	$1,399
Mono VGA	$1,049	$1,179	$1,249	$1,499
VGA Color	$1,199	$1,329	$1,399	$1,649
VGA 1024i	$1,249	$1,379	$1,449	$1,699

FAST MICRO

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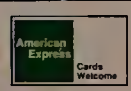

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Upgrade your 286 or 386 to IDE technology and Toshiba quality at a FastMicro price. This kit comes with a fast 20ms 105mb drive and built-in 1:1 controller, 16 bit IDE card with dual floppy controller & cables, 5.25" brackets & rails.

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- CP3208 200mb IDE 25ms 599

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- 6280-15T 15mbit/sec transfer rate 169

Micropolis (see DTC Controllers)
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- MC1518 1.3gb FH ESDI 14ms 2595

Plus Development
- HardCard IIXL 50mb 9 ms 16bit 399
- HardCard IIXL 105mb 9 ms 16bit 579

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IDE performance, big 89 megabyte capacity, 19ms access time and 5 mbps transfer rate make this a great buy. Controller, cables and rails are included to make installation fast and easy.

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- 30MB XT Kit ST238 w/ cont. 249
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- 40MB AT ST157A 28ms IDE Drive 179
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- 210MB ST1239A 15ms IDE Drive 599
- 330MB ST2383E 16ms ESDI Drive 1199

Teac
- 1.2MB 5.25" Floppy 65
- 1.44MB 3.5" Floppy 65

Toshiba 1.44mb Floppy $59

Complete with mounting brackets and installation instructions, this Toshiba works in all true 286 & 386 compatibles. Will also read/write/format 720K 3.5" disks. Rails, add $5.

Toshiba
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Western Digital
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- WDAC280 80mb IDE 20ms 299
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- Satisfaxtion Classic - Intl 9600 379

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Intel
- 287XL 85
- 387-DX25 or 33 209
- 387-SX16 / 20 ....129 /139

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FastData 16 Bit VGA $69 (256K vers.) $89 (512K vers.)

The FastData 16 bit VGA card features 256K of video memory, does CGA, EGA, & VGA up to 1024x768 and comes with drivers for popular software including Windows 3.0. It's expandable to 512K and has a 30 day money-back guarantee.

- FastData 16bit 1mb VGA 99
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- FastData MGP Card 29

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- 9600B Send/Receive Fax w/2400B 119
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- IDE 16 Bit 1:1 Hard/Floppy Disk Cont. 29
- IDE HD/FD w/Par/2 Serial/Game 39
- Parallel/2 Serial/Game Card 29
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- XT 1.44 Dual Floppy Controller 35

FastData 2400 Baud Modem $59

The FastData 2400 baud internal modem is fully Hayes compatible and can be configured to COM port 1-4. It has an internal speaker, is auto answer & auto dial, and comes with communications software.

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- Multisync 4ds 949

Orchid ProDesigner II 1mb 279

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- P3300 24 Pin Wide 369
- P6200 / 6300 ....469 / 629
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Okidata
- Okilaser 400 669

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- NX1001 149
- NX2410 / 2415 ....239 / 369
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- Microlaser PS17 1199
- Microlaser PS35 1499

FastData 286/12 $699

Imagine a fast 286 computer at a super price and you've got the FastData 286/12. This system is complete, not stripped. You get one megabyte of zero-wait-state memory and a 28ms IDE hard disk - standard. Also included is an amber monitor and graphics card, your choice of a high density 1.2mb or 1.44mb floppy drive and a Key Tronic keyboard. And since its a FastData, you are backed with toll-free technical support, one year warranty with the FastShip replacement program & on-site service plan, and our 30 day full money back satisfaction guarantee!

286/12	40mb	80mb	100mb	200mb
Mono	$699	$829	$899	$1,149
Mono VGA	$799	$929	$999	$1,249
VGA Color	$949	$1,079	$1,149	$1,399
VGA 1024i	$999	$1,129	$1,199	$1,449

- ✓ 12mhz 80286 processor.
- ✓ 1 megabyte RAM.
- ✓ 40 mb 28ms IDE hard disk 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive (2nd drive add $59)
- ✓ Standard chassis (shown)
- ✓ Five drive bays.
- ✓ 200 watt power supply.
- ✓ Math coprocessor socket
- ✓ Monochrome monitor with monochrome graphic board.
- ✓ Clock calendar, parallel port, game port, & 2 serial ports.
- ✓ Key Tronic enhanced 101 keyboard.
- ✓ 8 expansion slots, 6 available.
- ✓ MS-DOS 5.0.
- ✓ Full documentation.
- ✓ FCC Class B approved.

FAST MICRO Software 1-800-441-FAST

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Who says powerful relational databases are expensive? Not with Personal R:Base. It has inuitive pull-down menus that let you query your data, build quick forms and reports automatically and even build applications without eomplex programming. You can import from and export data to other formats and even dynamically reads and writes dBase files.

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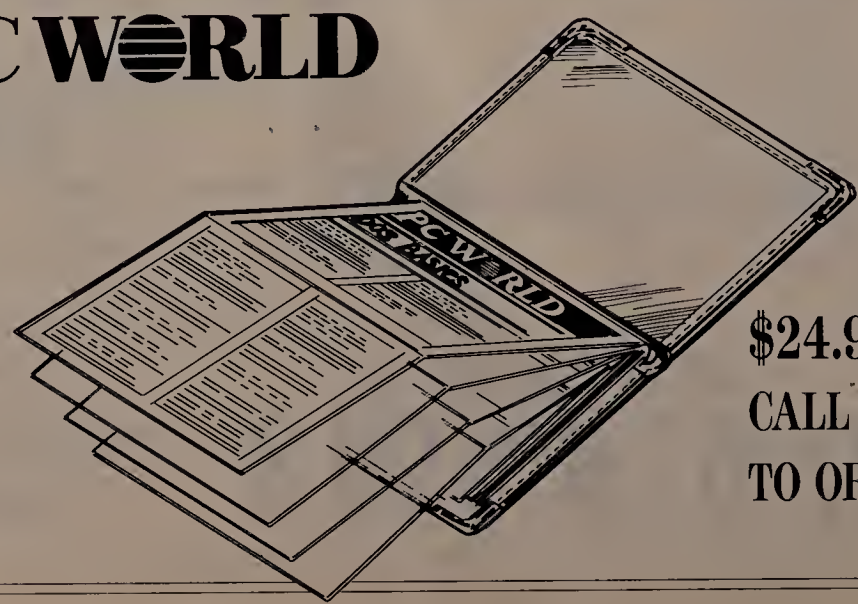

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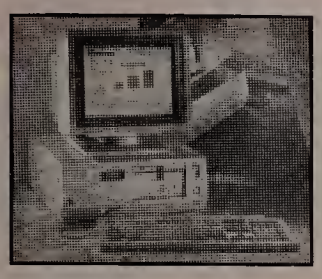

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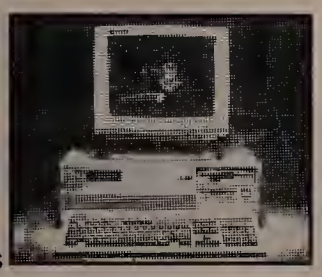

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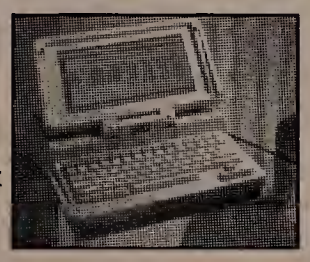

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Autodesk Animation Player for Windows 129
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MicroKey/AudioCard (CO-quality sound) 479
ProAudio Spectrum sound board from Media Vision .. 279

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Computer Eyes Color Professional $295
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NTSC Encoders / Decoders / Genlock / Overlays
Everex Vision VGA w/Overlay 512-KB / 1-MB ..... 549 / 629
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Jovian VIN Plus NTSC encoder (external unit) 379
MAGNI VGA Producer VGA, Video in/out/overlay 1475
Willow VGA-TV GE/O (w/Video Titler s/w) 645

Video Titling Software -- broadcast-quality titling
Video Titler by Entropy Engineering $375

Integrated Multimedia Systems from Video Associates
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New Product - Windowed video for MS Windows !!!
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Super Video Windows Tuner Board (for TV input) .. 295
Super Video Windows Developer's Kit 395

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microLaser PS-35 (PostScript, 35 fonts, 6-ppm) 1499
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microLaser XL PS-35 (PostScript, 35 fonts, 16-ppm) .. 2795
1-MB SIMM memory upgrade 139

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LBP-8R laser printer (duplex 2-sided printing) 2199

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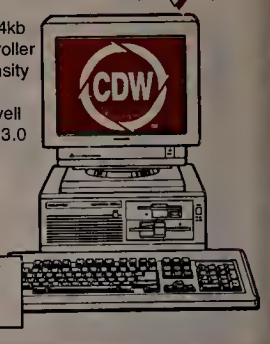

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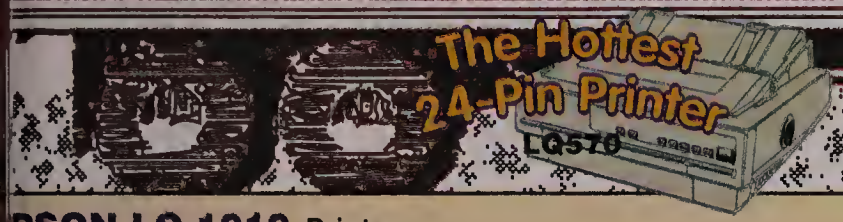

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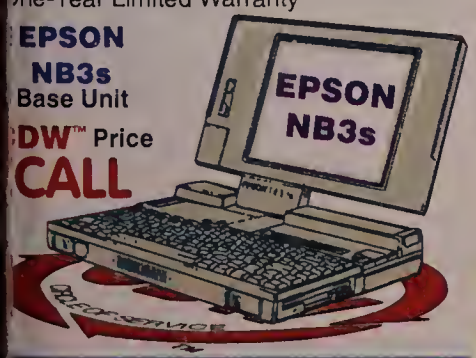

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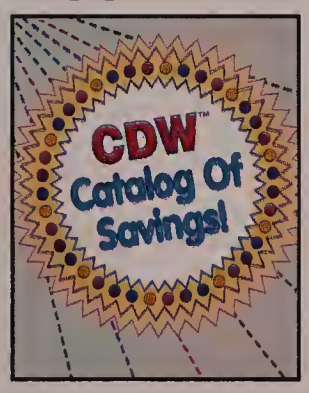

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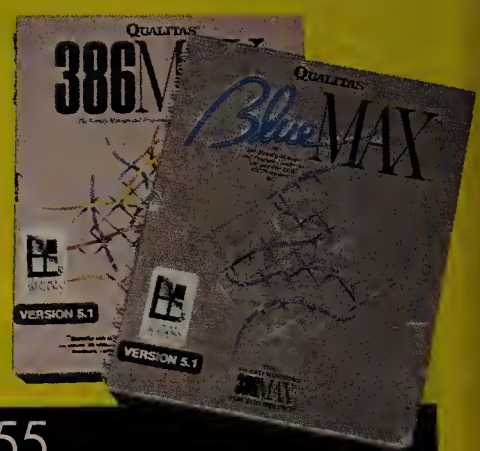

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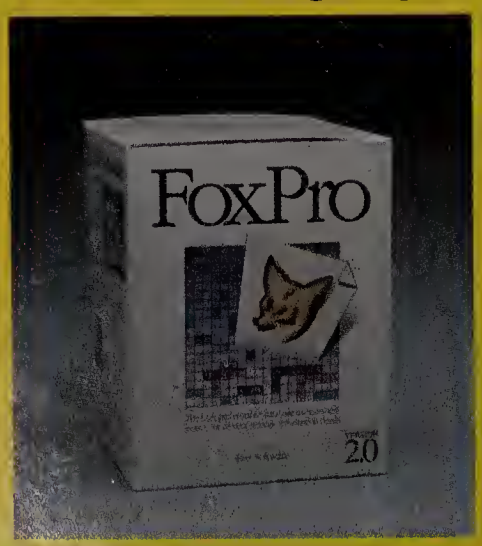

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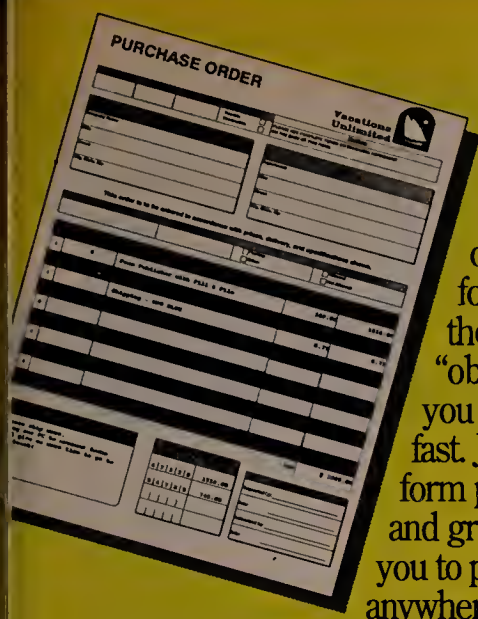

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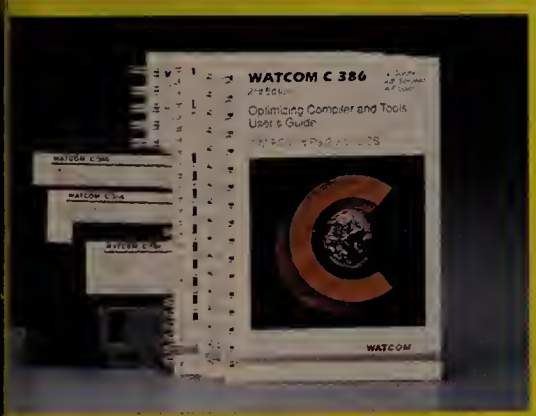

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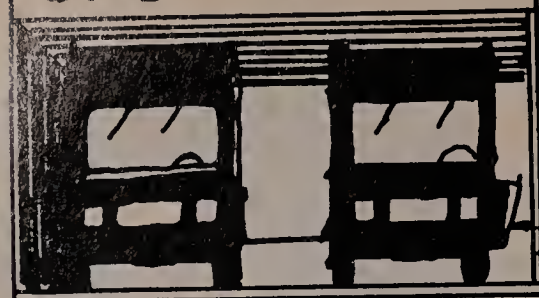

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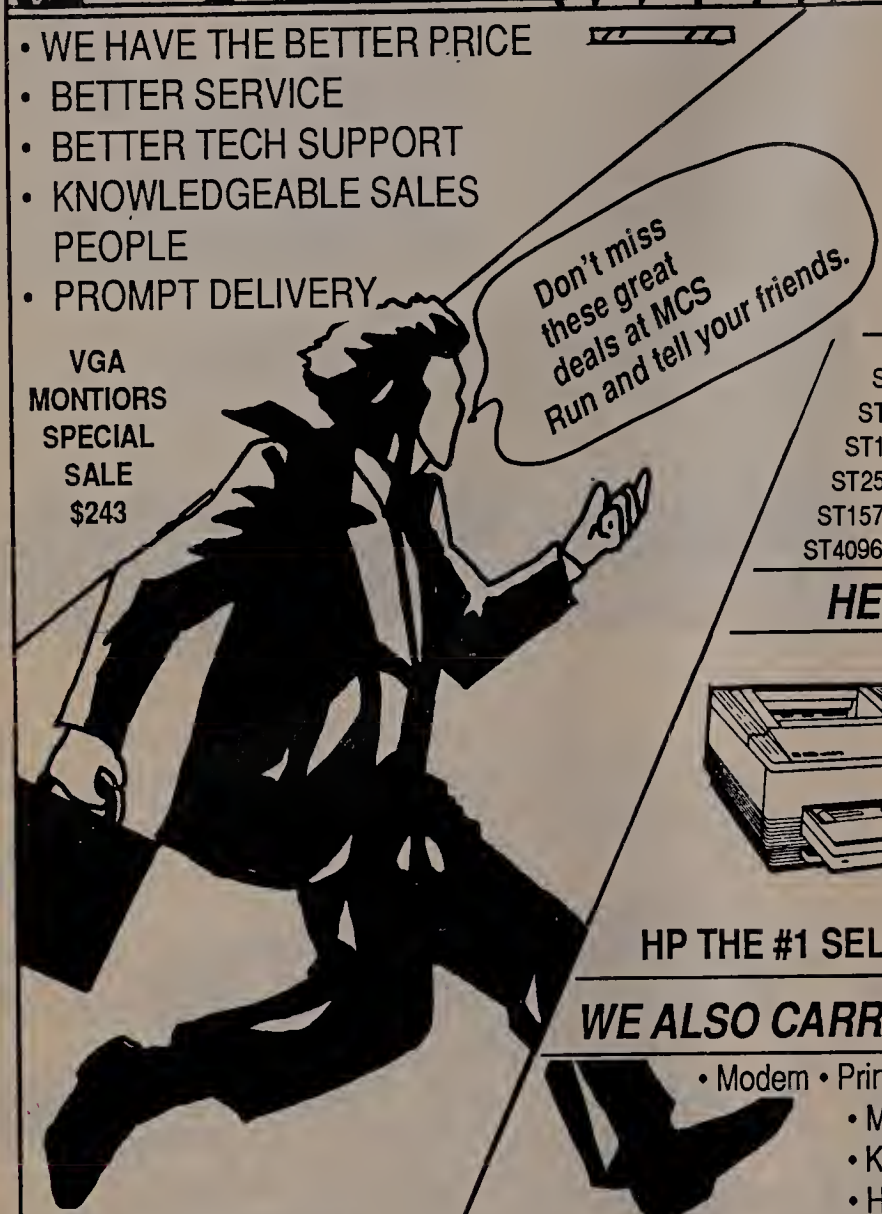

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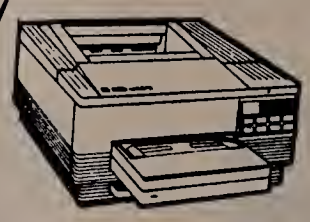

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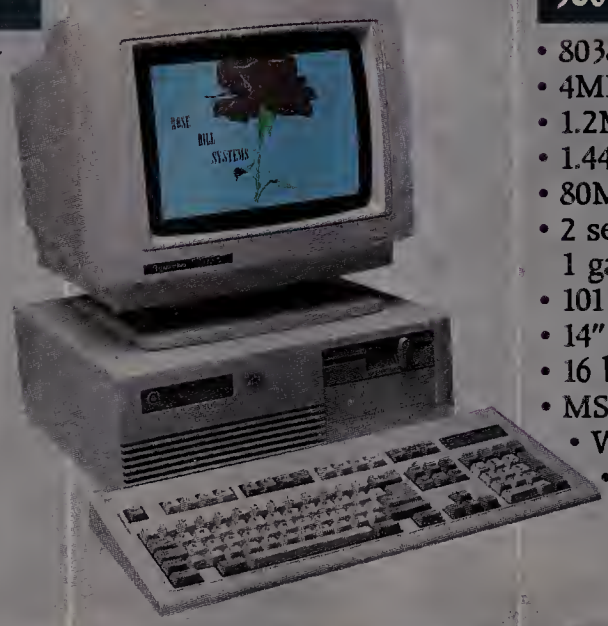

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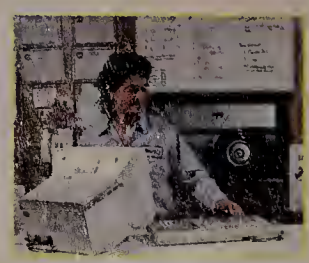

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Opening a window on personal finances

Steve Bass

My checkbook has always been a mess. The last time I balanced it was in 1963; and I've always found it nearly impossible to get my expense reports together in a timely fashion. My finances were beginning to look just a tad better than my local savings and loan's until I started using *Quicken.* Now, like every other program in the world, *Quicken* is going *Windows*—and it may just take me with it.

Until recently, personal finance was limited to DOS, which is okay by me. I'm not a *Windows* fan; I use mostly DOS applications. But after playing with *Quicken for Windows* and Microsoft's just-released copycat *Money for Windows,* I'm convinced that a lot of people will decide to go graphical just to take advantage of one of these. Maybe even me.

Both products take the drudgery out of entering data, more so than *Quicken*'s DOS version. You can work from a familiar on-screen check or check register. If you type in the first few letters of a payee's name, previous entries (and amounts) for that account are found and entered onto the register. And of course *Windows* lets you put multiple accounts on screen or use *CheckFree* to send your bill payments to the bank in the background while you continue working.

Another big advantage of any personal finance program is balancing your checkbook. Both products ask the right questions and walk through account reconciliation—but *Money*'s SmartReconcile does a better job. It looks for transposition of digits and mistyped numbers. If I'm 45 cents out of balance and it finds that I typed $123.05 (and it should've been *$123.50,*) a dialog box will ask me to examine that check amount. It also watches for a deposit accidentally entered as a payment or a decimal point stuck in the wrong place. It's a pretty slick feature.

Money has a few other new bells, and

JAMIE HOGAN

if you're already committed to *Windows,* either financial program is a good choice. But if you're a committed *Quicken* user like me, you'll probably find the transition to *Quicken for Windows* easier. All the keyboard shortcuts are still intact (I don't move my fingers from the keyboard to a mouse unless it's absolutely essential), and with *Quicken for Windows,* I feel at home.

Quicken for Windows' new desktop work area is more customizable than *Money*'s—with neat, user-definable icons for accounts. Let's say you like to have your checking and credit card accounts always up and ready to go. Once you set up the work area, that's how it comes up for your next session.

There's more: While creating a report, you can use the Quick-zoom feature to open a window that lets you refer to the check register, and Forecast Deposit Account helps you avoid cash flow surprises. The interactive budgeting tool works like a minispreadsheet and is powerful enough to let you perform simple "what-ifs" and switch from monthly to quarterly views.

Quicken for Windows' extensive reports are dynamically connected to the check register—changing one changes the other—and Dynamic Data Exchange (DDE) lets you transfer information directly into an *Excel* spreadsheet. *Money,* which lacks DDE, imports *Quicken* files but exports only to ASCII.

Whether or not you're using *Windows,* you'll be hard-pressed to find something better than *Money* or *Quicken* to keep your finances in line. I'm into my DOS-based *Quicken* so often that *Windows* multitasking may give me just the reason I've been looking for to convert to the graphical environment once and for all. All that I need to clinch it is an automated teller feature that'll drop $20 out of the floppy drive.

Contributing Editor Steve Bass is a family therapist and president of Pasadena IBM Users Group.

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Quicken for Windows, Quicken 5.0 $69.95, Intuit; 800/624-8742, 415/322-0573
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OUR 6.4 POUND COMPUTER JUST GOT A LOT LIGHTER.

Most computer companies give you reductions on slow moving computers. At Dell, we give you reductions on award-winning ones.

After our 320N notebook won *PC Magazine's* Editors' Choice, we dropped its price by $900.

While that may sound amazing, it's even more so when you hear the kind of things those editors had to say:

PC MAGAZINE EDITORS' CHOICE 8·1·91

"Dell keeps getting it right."

"Everything about this computer... inspires confidence."

Engineered to tackle the most demanding tasks, the Dell® 320N is an i386™ SX system that runs at 20 MHz.

While it delivers a lot of power, it sure doesn't use much. In a *PC Magazine Labs* test, our notebook led the 20 MHz field in battery life, with over 3 hours of power.

When the time finally comes to replace the battery, Dell's "Continuous Power Battery System" will let you do it without even leaving your application.

But superb power management isn't all that makes this notebook the "ideal road machine," as *PC Magazine* calls it; there's our unmatched service and support.△

And the fact that Dell was ranked "best" in J.D. Power and Associates Customer Satisfaction Index for PCs in Small to Medium Sized Businesses.℠

So call Dell today. And ask for our $2,499 computer. At this price we're practically dropping it in your lap.

THE DELL 320N i386SX 20 MHz SYSTEM.
THE SYSTEM INCLUDES 40 MB HARD DRIVE, AND 1 MB RAM.*
$2,499. LEASE◇: $93/MO.**

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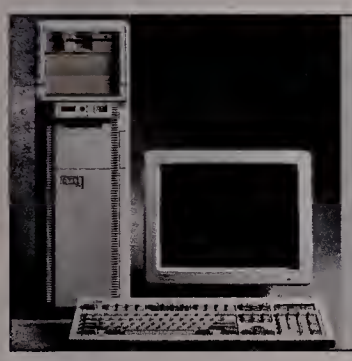
With today's economy the way it is, choosing the wrong computer could land you in hot water. You either pay too much or get too little. Not an easy choice to make.

That's why, at Dell, we've lowered the prices of our entire line of computers, including all upgradeable systems. So now you can get one of the best computers on the market without going in over your head financially. Our support isn't sink or swim, either. If a Dell computer should ever need service, we offer a toll-free technical support hotline that solves 90% of reported problems over the phone usually in 6 minutes or less. Plus, our innovative toll-free TechFax℠ line offers system information 24 hours a day. And the Dell electron bulletin board lets you see other users' questions with our answers. If necessary, a trained technician can be at your desk-side usually by the next business day as part of the full-year, on-site service contract included in the price.△

Perhaps this is why Dell comes so highly recommended.

HERE'S THE SUPPORT YOU'LL GET:

- ~ *Toll-free technical support hotline for the life of your system.*
- ~ *One full year of on-site service included in the system price.*△
- ~ *Self-diagnostic software.*
- ~ *Toll-free 24-hour TechFax line for instant access to Dell technical information.*
- ~ *On-line Bulletin Board to communicate with Dell technical staff and other Dell users.*



THE
DELL SYSTEM® 450SE.☆
WAS $10,599

NOW ONLY $9,799

Lease: $354/month.*

- Upgradeable i486™ microprocessor running at 50 MHz.

320 MB UltraScan™ 14C System $9,799

Price listed includes 4 MB of RAM.* 80, 100, 200, 330 and 650 MB hard drive configurations also available. 33 MHz upgradeable systems also available starting at $6,599 and 20 MHz i486SX upgradeable systems also available starting at $5,299.

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DELL SYSTEM 420DE.☆
WAS $4,399

NOW ONLY $3,699

Lease: $134/month.*

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100 MB UltraScan 14C System $3,699

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DELL SYSTEM 325P.☆
WAS $2,599

NOW ONLY $2,199

Lease: $82/month.*

- i386 microprocessor running at 25 MHz.

80 MB VGA Color System $2,199

Price listed includes 2 MB of RAM.* 50, 100, 200 and 320 MB hard drive configurations also available. 33 MHz systems also available starting at $2,199.

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THE
DELL SYSTEM 320LT.☆
WAS $2,899

NOW ONLY $1,999

Lease: $75/month.*

PC MAGAZINE EDITORS' CHOICE 3-12-91

- i386SX microprocessor running at 20 MHz.

40 MB VGA LCD System $1,999

Price listed includes 1 MB of RAM.* 120 MB hard drive configuration also available.

THE
DELL SYSTEM 320N.☆
WAS $3,399

NOW ONLY $2,499

Lease: $93/month.*

PC MAGAZINE EDITORS' CHOICE 8-1-91

- i386SX microprocessor running at 20 MHz.

40 MB VGA LCD System $2,499

Price listed includes 1 MB of RAM.* 60 MB hard drive configuration also available starting at $2,799.

intel inside ™ ☆

*Performance Enhancements: Within the first megabyte of memory, 384 KB (450SE, 433SE, 420SE, 450DE, 433DE, and 420DE), 128 KB (320SX, 316SX, and 320LT) and 96 KB (433P, 333D, 325D, 333P, 325P and 320N) of memory is reserved for use
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THE
DELL SYSTEM 433P.☆
WAS $4,099

NOW ONLY $2,999

*Lease: $112/month.****

- Upgradeable i486 microprocessor running at 33 MHz.

80 MB Super VGA (1024 x 768) Color System $2,999

Price listed includes 2 MB of RAM.* 100, 200 and 320 MB hard drive configurations also available.

THE
DELL SYSTEM 333D.☆
WAS $3,999

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PC MAGAZINE EDITORS' CHOICE 1-15-91

- i386 microprocessor running at 33 MHz.

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*Lease: $90/month.****

- i386 microprocessor running at 33 MHz.

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Price listed includes 2 MB of RAM.* 50, 100, 200 and 320 MB hard drive configurations also available.

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DELL SYSTEM 316SX.☆
WAS $1,799

NOW ONLY $1,599

*Lease: $60/month.****

- i386SX microprocessor running at 16 MHz.

40 MB VGA Color System $1,599

Price listed includes 2 MB of RAM.* 50, 80, 100, 200 and 320 MB hard drive configurations also available.

THE
DELL SYSTEM 320SX.☆
WAS $1,999

NOW ONLY $1,699

*Lease: $64/month.****

- i386SX microprocessor running at 20 MHz.

40 MB VGA Color System $1,699

Price listed includes 2 MB of RAM.* 50, 80, 100, 200 and 320 MB hard drive configurations also available.

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J.D. POWER AND ASSOCIATES

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2. Apple
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5. Everex
6. CompuAdd
6. Compaq
8. Epson
9. Toshiba
10. NEC

YOU'RE RIGHT.

The results are in from the first-ever J.D. Power and Associates Customer Satisfaction Survey for PCs in Small to Medium Sized Businesses.™ Guess who was ranked best?

And if you think that's big news, turn the page and see what we've done to our notebooks.

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